Merchandising Number

A McGraw-Hill Publication
San Francisco, Calif.

October 15, 1925
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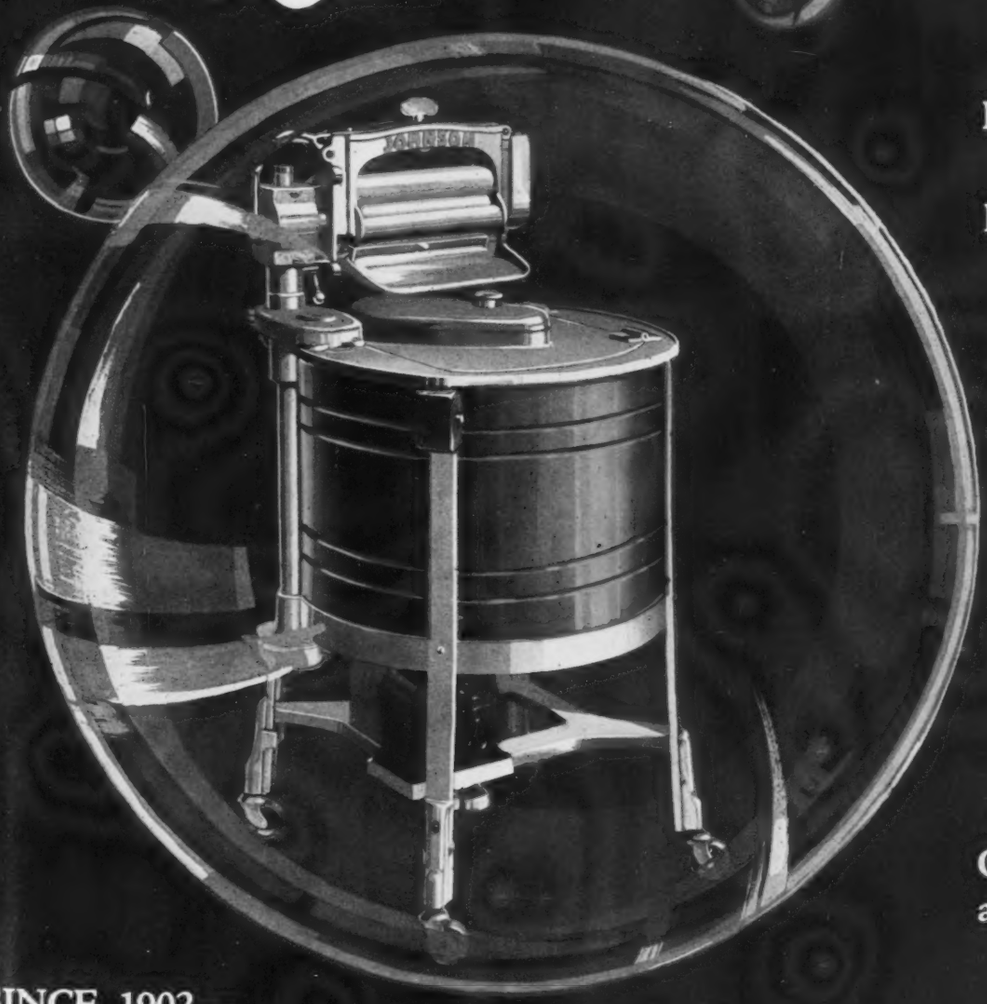
Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES

a New JOHNSON WASHER *combining*



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that floats with the load—Speed, Gentleness, Thoroughness.

SINCE 1902—
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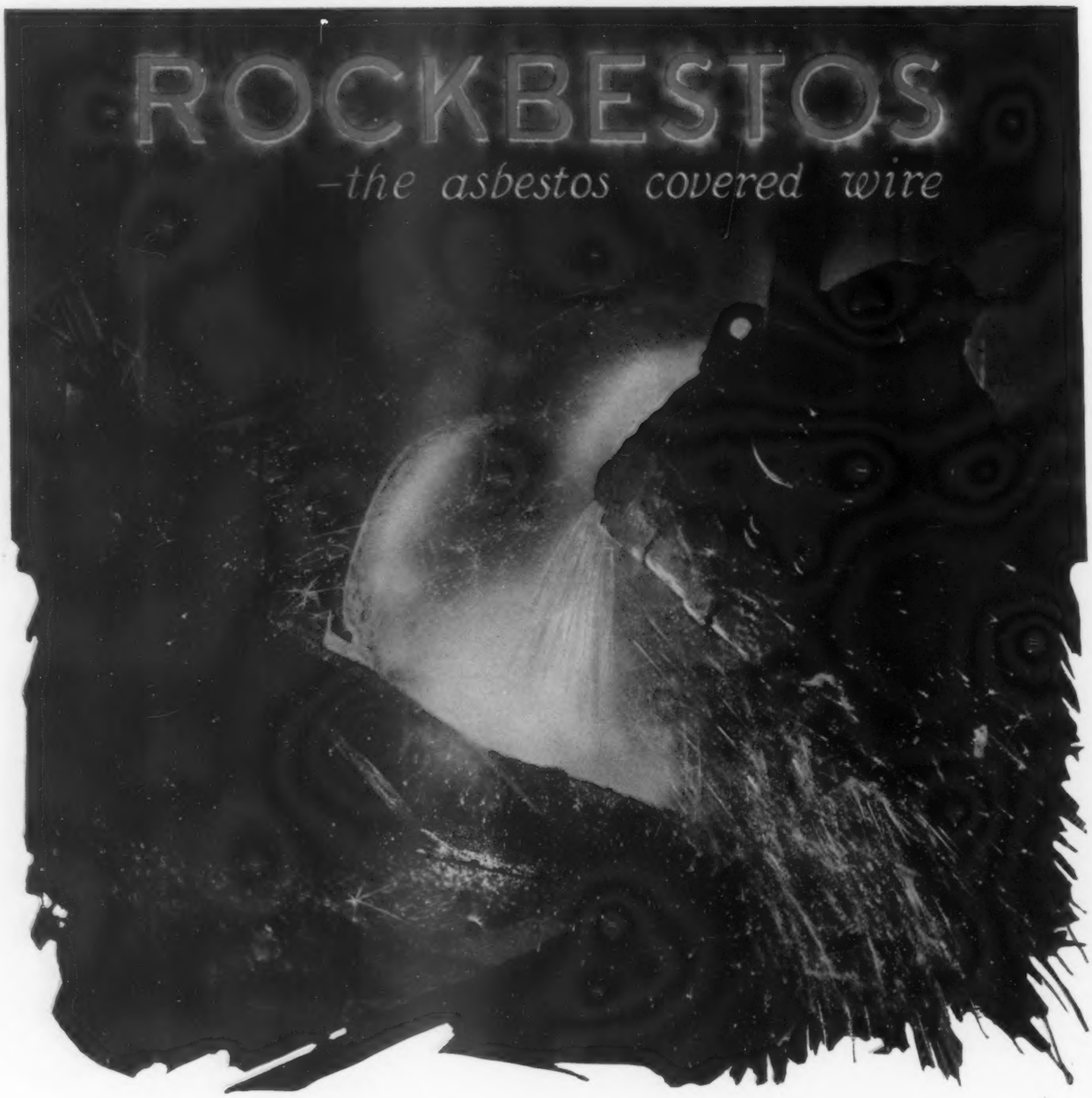

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SAN FRANCISCO **LOS ANGELES**

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IN THE ELEVEN WESTERN STATES

A McGraw-Hill Publication

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C. T. HUTCHINSON, Editorial Director
G. C. TENNEY, Managing Editor

G. R. HENNINGER, Associate Editor
R. N. PHELAN, Associate Editor

W. A. CYR, Associate Editor
B. H. SNOW, Northwest Editor

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A Noteworthy Issue

THIS is a noteworthy issue of the Journal of Electricity, both from the value of the statistical matter contained in it, and as a means of interpreting the signs of the times in the development of load-building in the eleven Western states.

The studies of the programs of the central stations in the merchandising of appliances for the purpose of increasing the domestic load are significant, and, to our knowledge, this is the first time that any publisher has offered to his clientele so comprehensive a survey of this interesting surbject. Here are presented not merely the bare figures of volume of sales for the various appliances, but accurate information as to sales methods, trade regulations, and the different bases for the compensation of salesmen.

Then there are also the annual surveys showing Western distributing outlets, and the manufacturers' directory, requiring an infinite amount of careful compilation in order to present the data in as nearly complete form as possible, carefully indexed for ready reference. There could be no more vivid presentation of the value of the Western market for electrical goods, nor of the increasing realization on the part of manufacturers that this field is worthy of careful cultivation.

As an advertising medium this issue will be alive and active until its successor appears a year hence. This annual issue has established itself as an authority through its value as a reference work, the demand for additional copies always exceeding the supply.

In order to anticipate the demand, the publishers have printed 500 additional copies over the normal press run. These are offered at 50 cents each as long as they are available. Our readers are urged to place their orders as promptly as possible for such extra copies as they may require.

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EDITORIAL

Fully Equipped

THIS issue tells the story of merchandising appliances in the eleven Western states, and especially the development of central station merchandising as far as it has gone. There are tables, a symposium on many of the details entering into sales organization, and other data, all having taken a great deal of labor and effort in compilation.

NEVERTHELESS, valuable and informative as these data are, we would venture to direct special attention to the article entitled "Coolie Wages," by Richard E. Smith of the Southern California Edison Company, in which there will be found a wealth of philosophy well worth careful study and reflection.

"COOLIE Wages," the bit that is paid almost grudgingly to the central station for one month's service—the price of a golf ball or two, a caddy fee for eighteen holes, a tip for the waiter after a good dinner for two or three people—that is the average wage for electrical service in the home.

SO we are trying to learn something about that which is presumably our business. Our central stations are waging great campaigns to spread the gospel of the electric servant in the home, the lightener of domestic burdens, the eliminator of household drudgery. Therefore, let us try and rationalize our thinking as applied to things electrical. We do not consider the installation of a bathtub today, and a water heater a year hence, nor lighting fixtures when our house is built, to be followed by the purchase of globes at some future date. Is this any more absurd than to buy electrical equipment for a home over a period of years? We think not.

TWENTY years ago the automobile manufacturer used to sell his car at an advertised price, and when the buyer came to take delivery he found that he had to purchase a windshield, a top, a starter, headlights and all sorts of other accessories before he could drive away in triumph. This practice ceased long ago in the automobile trade, but it is just beginning to excite comment in the electrical industry. Better late than never, of course, but let us not take too much time for the consciousness of our laxity to bring about a much needed reform.

THIS is not a matter for any one branch of the industry alone. The central station salesman should preach the gospel of complete electric service and bring about such service as quickly as its many advantages can be made apparent to every householder. The trade, the manufacturer, the jobber and the retailer should absorb to the full the 100 per cent electrical idea and promote it with every power at their command. The contractor never under any circumstances should try to lower wiring and outlet standards merely to obtain for himself a wholly fictitious advantage in presenting estimates of first cost. Instead he should point out the advantages of adequate wiring, should raise rather than lower standards.

"FULLY equipped" is the slogan for the electrical industry today. Let us be content with nothing short of that mark.

Nursing the Prospect for the Dealer

IN some instances, when meetings are being held to discuss co-operative methods whereby power companies and dealers may benefit from some national or sectional activity, such as a lighting sales plan, there are those who express a dependence upon the power companies which is not entirely commendable.

Where prospects are to be apportioned by representatives of a power company, it is indeed a poor salesmanship which expects the power company to conduct the rest of the sale up to the very point of the actual wiring job, leaving the one so benefited to garner the profits without any undue effort. It is all very well to expect each unit of a sales organization, in which the power company is a leading member, to do its share of the activity; but it is not so well to expect one member of the group to carry all of the sales load.

As a rule, dealers in electrical merchandise are willing and anxious to stand upon their own feet, asking only that they be given a fair dealing by those with whom they combine efforts to sell their products. They do not relish the idea of depending upon the larger organization to nurse along the prospects which have been assigned to them, preferring by far to make their own sales, so that they may be sure that they are made right, made with a full understanding of the position of the dealer, of his conditions of sale and of his guarantees.

That He Who Rents May Enjoy Electrical Convenience

DESPITE efforts of the realtors to establish everyone in a home of his own, there remain many, especially in the cities of the Pacific Coast region, who rent their homes. And be they unfurnished rooms, apartments, flats or even bungalows, such tenants are at the mercy of their landlords for the extent of their electrical convenience.

With those appliances which may be plugged into the dining-room ceiling fixture, with more or less electrical inconvenience, or for the washing machine which can, by virtue of two-way sockets, be tied to the kitchen or back porch hanging cord, the renter, depending upon his disposition and desire for electrical advantages, may get along after a fashion.

But as regards the major appliance, the range, water heater, or air heater, where special wiring is necessary, the renter is at a disadvantage. Even the installation of a kitchen lighting unit is a matter of question in a great many cases.

When confronted by such a situation, the temptation is to give a helpless sigh, shrug the shoulders, and admit that there are many places into which electricity cannot go. The obstacle of the landlord is too terrifying, too hopeless.

But is it? As long as so great a percentage of possible buyers of electrical merchandise are hidden behind the smoke screen of a "landlord bogey," a rich field will remain comparatively unexplored. Just what means should be undertaken to educate and sell the landlord on wiring which will permit the use of more electrical appliances, certainly should become the subject of real study. As long as the landlord holds the keys to a large potential sales territory, it is to him that attention must be directed, in order that he may unlock the doors for the industry to go through.

Rewiring Homes Offers Fertile Field for Contractors

IN the opinion of economic experts, it is believed that the building boom will reach its peak by the end of 1925 and that next year will show a reduction in the amount of building and a general stabilization of building activities. This will mean a reduction in the volume of new domestic electric wiring, not in the sense that the construction of new homes will cease entirely but that the abnormal volume which has held for the past four or five years will show a marked decrease.

This situation bears upon the electrical industry from two directions. In order to maintain the present dollar-and-cents volume of electrical contracting, more attention will have to be paid to quality jobs. Here is where the Red Seal campaign will have its effect. But more important still, such situation will mark the beginning of a new cycle for the industry —a period of rewiring homes already wired. In every community there are thousands of homes with no convenience outlets, with antiquated fixtures and with no provisions for electric ranges and electric water heaters. This work will go to the man who can point out potential opportunities for service and convenience with each additional outlet. It will be a sales job which will require more than the usual amount of imagination and one which will yield profits in the ratio of the amount of work and thought given to each sale.

This job of modernizing the wiring and electrical equipment of homes that were not constructed originally to give the owners the maximum comforts which electric service affords is a task to which the entire industry and the contractors in particular can afford to give thought and attention.

How Shall They Know If We Do Not Tell Them?

IN his epistle to the Romans St. Paul asks the question, "How shall they believe in him of whom they have not heard and how shall they hear without a preacher?" To paraphrase the words of the apostle and bring them up to date, we might ask, "How can the public believe the utility story if they do not hear it, and how can they hear the story if the utilities do not tell it?"

The answer is found in the Rocky Mountain states. For the past three years the Rocky Mountain Committee on Public Utility Information has conducted courses in public speaking, especially among the younger employees in that district. Through these efforts there has been produced during that time a corps of trained young men and women who are well versed in the art of public speaking and who know the utility story through the training they have received. The committee goes one step farther. It also maintains a speakers' bureau and furnishes to

the industry material that might prove useful in the preparation of addresses or papers on utility subjects. Every effort is made to see that the public can and will be properly informed regarding the purpose and activities of the utilities in that district.

This procedure might be followed by many of the large utility companies. It would be a simple matter to organize classes among employees in various districts and to secure from the personnel of the utility itself men qualified to act as instructors. Then when the occasion arose, speakers could be furnished upon a moment's notice. Especially in these western states where the utilities are frequently the centers of political discussion and attack does the industry need a corps of "preachers" who can spread the "gospel" of the central stations.

Standardization of Electrical Ordinances Needed in California

THE rules covering electrical installations in various cities are frequently cumbersome in themselves and contradictory as between different cities. A manufacturer making a product which is satisfactory for use in one city frequently finds it will not be permitted in another city only a few miles distant. A contractor operating in more than one locality finds the same condition regarding installations. Journeymen electricians frequently go from city to city; they find that work which was acceptable in one place is not allowed in another. All of this has resulted in losses of money and time, in addition to the inconvenience it has caused.

Steps have been taken by the California Association of Electrical Inspectors to remedy this condition. This organization is advocating a uniform ordinance for all cities, and discussed this subject at considerable length at its convention recently held in Fresno, as told elsewhere in this issue. It was suggested that the National Electrical Code and the Electrical Safety Orders issued by the Industrial Accident Commission of the State of California be included as the basis of such an ordinance; and a committee has been appointed to work on this problem of standardization of local ordinances. Standardization and simplified practice in all industries are being urged by the United States through the Department of Commerce. The Association is furthering this work as it applies to electrical ordinances; it should be encouraged in its efforts.

Not Self-Sufficiency but Cooperation Makes for Progress in Industry

SOME time ago an interesting fiction story was published about a man who thought he was the whole show. As a matter of fact he was not and it took him some time to find it out, with disastrous results to his pocketbook and to his self-esteem.

The advancement in the electrical art is not due to any one individual, to any one organization nor to any single group. Each has contributed its bit to the sum total of human knowledge, and the intelligent thinking worker in the industry realizes his own dependence upon his fellow workers and is willing to contribute his bit in exchange for what he learns from others. Cooperative movements as a rule are made up of the intelligent efforts of the thinkers whose broad viewpoint convinces them of the desirability of giving generously of their store of knowledge in order that they may partake of the benefits derived from obtaining the knowledge of others. Occasionally there will be found members of the group that decline to participate in such movements. They may feel that the movement is not worth while or perhaps that they are bound to benefit from the movement whether they contribute or not and consider it a shrewd stroke of business on their part to save the money and thus benefit at the expense of their co-workers.

The only remedy by which to correct such a situation is the right kind of missionary work on the part of friends and associates. No man is wholly selfish, narrow or bigoted in his viewpoint. It remains only to find ways and means of "getting under his hide"; moral suasion is better than a big stick in cases of this kind.

Opportunity Knocks at the Door of Denver Contractor-Dealers

ON another page of this issue there appears a story of the arrangements made in Denver, Colo., whereby customers of the Public Service Company of Colorado may pay their monthly service bills at electrical dealers' stores. This system affords a real opportunity for the contractor-dealers of Denver to make frequent contacts with users of electricity near their particular stores. This monthly visit of consumers to their stores should be the occasion for the dealer to display his wares to very good advantage. The real value to be received depends on the dealer; its success from his standpoint as well as that of the power company rests in his hands.

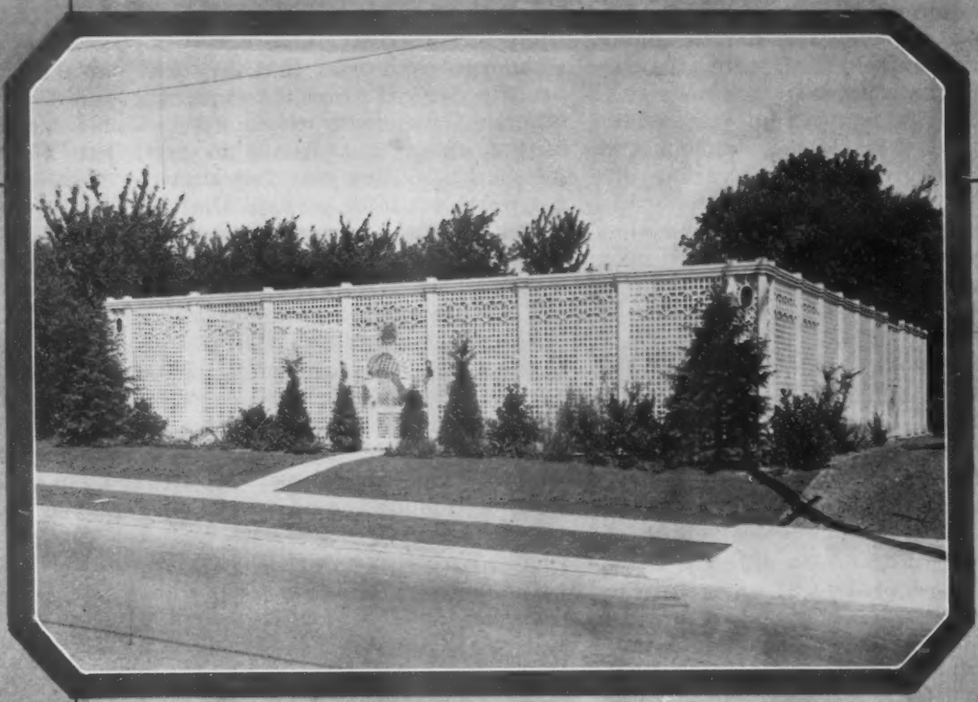
Air Mail Deserves Patronage of Industry

MEANS of speedy communication are vital to the business world, and the recent installation of air mail service is the most useful and important measure of postal improvement since the adoption of the railway postal car system in the sixties.

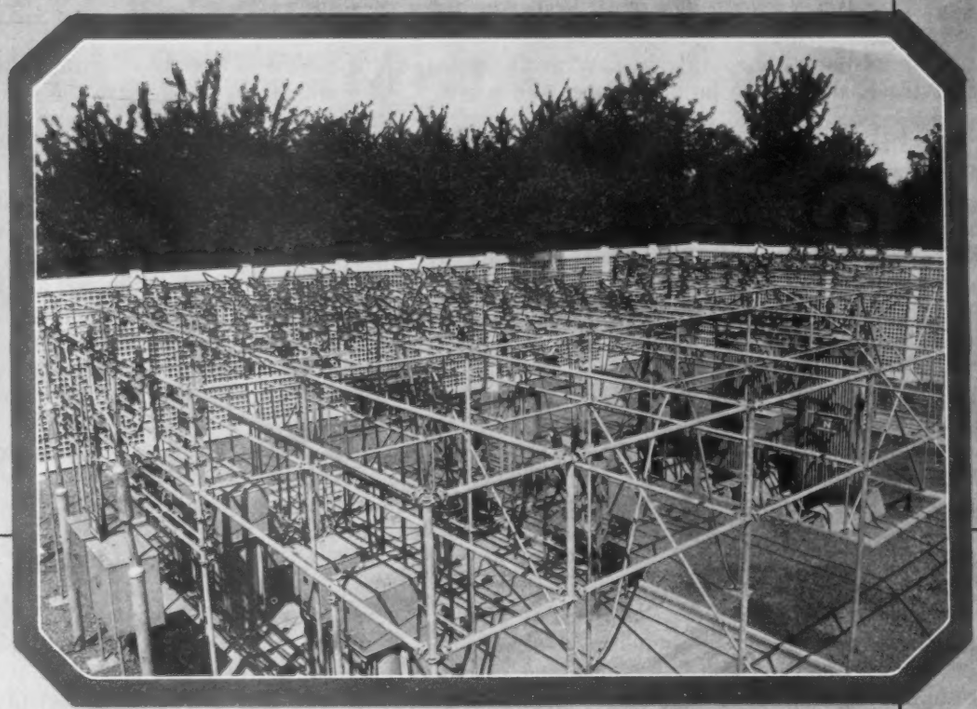
The effect of the new air mail routes upon the postal service of the country as a whole should therefore be clearly understood by the business world.

Transmission of mails by air is effected in less than one-half the time required by train. Air mail letters dispatched fron San Francisco today about 9 p.m. are delivered at their address in New York by first carrier day after tomorrow morning; or if forwarded from New York by train to other points, will move by the first morning train instead of by a late evening train. The delivery of such letters in postal territory served from New York will thus be expedited by at least thirty-six hours or more.

In many transactions time is of much importance. The air mail service is of great value in all such cases. It supplies a very desirable facility, especially beneficial to business men and should be used by them for letters, the speediest possible delivery of which is desired. In the case of such letters, the extra postage charge is negligible.



HAWTHORNE SUBSTATION of the Northwestern Electric Company of Portland, Ore. This company is developing a unit-type distribution system which calls for the establishment of a number of substations throughout the residential districts. Notwithstanding the fact that these new substations mean better service to those near by, many potential neighbors in chosen substation localities have protested vigorously against having anything of this nature brought into the neighborhood. In an effort to overcome this unwarranted antagonism the company has adopted the design here shown for use in residential areas. All circuits are handled in underground cables. The lattice completely hides all equipment and the net result is entirely pleasing.



Coolie Wages

By Richard E. Smith

Advertising Manager, Southern California Edison Company, Los Angeles

IN INDIA among the lower classes there is a group called punjabi, who appear to be about as insignificant in the social scale as it is possible to descend, even in India. The punjab does the most menial work for a mere pittance. For example, in a court room or similar place, it is the punjab who stands by with a huge palm leaf, which mechanically he waves up and down throughout the proceedings. For this he receives about two cents daily. COOLIE WAGES. Automobiles never have been accepted in China because ricksha men are cheaper than gasoline. Even so, they are so jealous of their rights that they fiercely combat any effort to introduce modern transportation. Without the opportunity to pull rickshas for a few pennies daily, they feel they would starve to death, little realizing the improved economic condition that arises from substituting mechanical for muscular power. COOLIE WAGES. People who have lived in the Orient are fond of relating the number of servants they had and how little they cost. A whole retinue can be maintained for the cost of a single servant in America. This leads to the theme of this article, "COOLIE WAGES," which demonstrates that in America electricity takes the place of punjabi, ricksha men and all other forms of cheap labor as exploited in the Far East.

I HAVE some friends whose principal indoor sport seems to be putting out the lights. When Fred goes in the house and leaves the light in the garage, Helen promptly goes out and turns it off. When Helen comes into the dining room, having left the light in the pantry, Fred is nervous until it is extinguished, and so they follow each other around the house, one turning off the lights which the other forgets.

Being a friend of the family, it was not a social error for me to comment on this one time, to which they replied in unison, much as if they had had several rehearsals, "Our electric bill last month was $1.55."

Think of it! Their electric bill was $1.55. No wonder they wear out shoe leather and their rugs to turn out the lights. The trouble with those poor folks is that they have no sense of humor. I use this expression in the English significance where it means a sense of proportion and balance.

This same Fred spends enough for cigars to light all the houses in the block. He tips check girls and waiters far more than he pays the light and power company. A single trip to a second-rate movie show, which he and his wife take as a matter of course, amounts to more than their electric service for the week. Twice a month Helen pays $1.50 to have her hair "done" and then gives the girl a two-bit tip.

I do not know how much Helen pays for cosmetics, but I imagine this amount would at least compete with the electric bill. If American women realized that the adequate and intelligent use of electric service would make the use of cosmetics largely superfluous, the drug stores would take out their fancy show-cases filled with gold-plated boxes and substitute in their place a line of washing machines, vacuum cleaners and electric irons.

There is one more illustration that I want to use before getting into the main discussion. Not long ago another friend of mine who is a radio "fan" made a mistake one night and connected 90 volts to the 6-volt wire. As a result he burned out all of the tubes in the set and the next day calmly paid $24 to replace them. Did he raise a great roar? Did he threaten to go to the Railroad Commission? Did he get up on a soap box and make a speech about corporations? You know very well that he did not—he thought it was a great joke.

In spite of all the things we tell ourselves about our intelligence and our ability to reason, the human mind runs in ruts. From the above illustrations may be seen two of the ruts in which our thinking machine travels. One is a "cheap" run. This represents the mind at work when it considers some of its needs. Do you remember the great roar that went up during war times when the newspapers raised their monthly subscription rates from 75 cents to 90 cents; when postage was raised from two cents to three cents; when Coca Cola was increased from five cents to six cents, and electric rates made a slight advance? We kicked about these four items whose total effect on our annual budget was about $8.40 and then calmly went out and paid $60 for an overcoat which three years earlier would have cost $18.

The second mental rut might be labeled, "Yes, I know, but we've got to have it." This is the one that explains the complacent expenditure of $24 for radio tubes.

Unfortunately the electric mind or consciousness of the American people has been steered into the "cheap" rut. Fred and Helen objected to an electric bill of $1.55, not because such a large amount of money was involved but rather because they are used to getting this service for coolie wages. If an American servant had done all of the things represented by this bill of $1.55, how much would it have cost? During that particular month electric service in Helen's house had done the washing four times, the ironing four times, had cleaned the rugs eight times, had made toast twenty-six times and coffee sixty times and had supplied abundant light for the house and garage for thirty nights, all for $1.55. Even the punjabi could not have approached this for real efficiency and economy.

If the American consciousness has acquired the habit of traveling in the "cheap" rut when electricity is discussed, it is largely our own fault, meaning those of us who constitute the electrical industry. We have encouraged our customers to seek methods

of reducing their electric bills. When the tungsten lamp first was introduced, an appliance salesman with more ambition than honesty told his customers, "This new electric lamp has a tungsten element and does not take nearly so much electricity as the old style lamp." He thought he was applying psychology, but he was merely appealing to the "cheap" rut in the customer's mind. Since then gas-filled lamps have been sold promiscuously on the single statement that they reduced the light bill. Many a man has paid the oculist fifty dollars as a penalty for accepting such advice and trying to save a nickel on his electric bill. Beautiful homes on which money has been expended lavishly for rugs, furniture, draperies and general decorations are ruined when dad brings home a handful of 200-watt type C lamps and installs one in each room.

No doubt the Indian gentleman who can induce the punjabi to work overtime without compensation feels that he has done a very shrewd thing. Is not that exactly what we are doing when we try to shave a nickel from the electric bill and deny ourselves a certain amount of comfort and convenience thereby?

One Woman and Her Electric Servant

On the other hand, we occasionally run across a mind that is running in the other groove. I recall meeting a lady who said, "My electric bill last month was $12 and I hope it will never be any less." No doubt I raised my eyebrows, for she hastened to add, "I never do a stroke of work if it is possible to have my electric servant do it. We burn lights all over the house, in cellar, closets, basement. Maybe it does cost a few cents more, but we get things done quickly without bumping our heads and skinning our shins in dark corners. I am not going to work for two or three cents an hour at manual labor. My time is worth more than that to my husband, my children and my friends. I know that the electric water heater costs money, but is it not worth it to have abundant hot water at any hour of the day or night without a second's wait? Electric service for the refrigerator costs $35 or $40 a year, but I would not go back to the ice man for twice that amount."

This last sentiment is especially apropos at the present time, considering the amount of interest being taken in electrical refrigeration. I doubt if there has been a single conference when some new subject like electric cooking or electric refrigeration was being discussed that someone in the crowd did not remark, "Yes, but isn't it pretty expensive?" It is this pessimistic attitude about our own wares that is to blame for most of the trouble. Where an automobile manufacturer meets competition by improving his product and raising the price, your electrical man seeks some way of getting the job by making it cheaper.

Here we have in America, working for coolie wages, an institution which is the greatest factor in our daily lives and also the least expensive. Of all the items in the monthly household budget the electric bill is the least. We pay more for newspapers which we throw away after a glance than we do for the myraid of services rendered through the electric meter. We cannot get the public mind out of this "cheap" rut until we remove the composite mind of the electrical industry from the same channel.

Returning to the subject of electrical refrigeration, how many men are there in the industry who honestly can say that they exclaimed, "Gee, that's cheap!" when told that one of these machines could be sold for $300. You know perfectly well that they did not say anything of the sort. On the contrary, they raised both hands and remarked, "Well, you never can get anyone to pay $300 for that outfit!" How many Steinways, Packards and Radiolas would have been sold if the public had been approached from such a standpoint?

An Electric Refrigerator Sales Talk

The way to handle this situation is to invite a prospect to sit across the desk from you and then say, "Now, Mrs. Brown, I've got a fairy story to tell you. I have here a magic touchstone which you may own. With this you will never be bothered by the ice man again. You will never be interrupted while entertaining friends. You will never have the baby awakened by the crash of ice on the screened porch floor. There will be no more dirty tracks on the sidewalk. You will never have sour milk on Sunday night because the ice man forgot to come on Saturday. You will never have to mop up the floor because someone forgot to empty the pan. You will never have to hang out the card telling the whole neighborhood that you are short of ice. If you wish to leave the house you will not have to leave the back door unlocked for the ice man. In fact, with this touchstone one of the problems of housekeeping will be solved permanently. You will have to make an initial investment but after that the cost will be no more than you have been paying for the old-fashioned unsatisfactory service. You can have this modern miracle for about half the price of a Ford car."

Will she be insulted? Will she get angry and run away? No indeed! She may not hand over $300 before leaving your store, but you can count on one sure thing and that is that she will go home and make life miserable for Daddy Brown until the question is settled.

The Wrong Viewpoint

The reason more electric refrigerators are not sold is that the electrical man does not handle the situation as suggested above. No indeed! He says, "Well, I tell you. That outfit is all right, but you know it costs $300. If you wait about six months they will probably bring out another design that you can get for less."

Don't you see how wrong this is? The customer did not come to your store to **save** money. She comes to **spend** money. If she wanted to save money, she would have stayed at home and you would never have known about it. The mere fact that she has shown any degree of interest means that she wants what you have if you will only go half way and let her have it.

The whole scheme of electrical merchandising "got off on the wrong foot." In the early days we used slow-burning wire and fastened it on the joints with

wooden cleats. When rubber-covered wire and porcelain tubes were introduced we were horrified at the increased price made necssary thereby. Electrical men all over the country fought the introduction of conduit ordinances, for they knew that their business would be ruined. The man who has sold cord pendants for 65 cents cannot understand how anyone may be willing to spend $65 for a chandelier. Many a man who would have spent $150 to get a good job of wiring in his bungalow has had an electrical contractor come along and argue that all these gimcracks are unnecessary and $50 is all he needs to pay to get the house **wired.**

The man who thinks in the "cheap" rut sooner or later comes to grief. If he is satisfied with razorback hogs, soon he will give way to his intelligent competitor who appreciates the value of thoroughbreds. If he is an orchardist who is complacent with seedling trees, later he must bow to the man with budded stock. If he is a ricksha man fighting against fate and satisfied with coolie wages, some day he will retire in favor of an automobile.

Great things are expected from the Red Seal campaign. It is a step in the right direction, and if we can get the electrical mind out of the "cheap" rut it will be successful. On the other hand, unless we do something of the sort it will have hard sledding.

The fundamental thought that we must get into our heads is that the customer does not buy three-way switches, convenience outlets, inch-and-a-quarter conduit and other technical things. He is after just the one thing, namely, comfort and convenience as supplied by electricity. He is building a home and he wants it right. He expects things in it which were missing in his father's home. He may not understand the convenience outlet, but if you tell him that he should have it, he will accept your judgment. The house will cost him more than his father paid thirty years ago, but he also expects that. He is making more money than his father did and he is willing to spend it. Why then, in the name of common sense, do we try to give him a job based on the traditions of 1900 when wooden cleats and cord pendants represented the acme of our art? Joshua made the sun stand still, but he was unique and has no modern counterpart. The world will not stop for the modern business man, and he must get into the procession or else stand by and let others pass.

The punjab waves a palm leaf for two cents a day and the ricksha man trots around with his burden while we smile. "The poor fellow doesn't know any better," we say—and then we look over the blueprints and tell the customer, "Well, this is going to be pretty expensive. If you will take out this set of switches and some of these convenience outlets, we can do the job for $65."

Emerson said, "Hitch your wagon to a star," and someone else remarked, "Not failure, but low aim is crime." If we are to get out of the class of push-cart peddlers and enter the field of merchandising service, we first must get a wider perspective of our possibilities and a greater appreciation of the economic value of our service. When Helen and Fred complain that their electric bill is $1.55, we should say, "Come down to the store tomorrow and I will sell you some things which will raise it to $3, and you will thank me for doing it."

Advertising for a $5,000,000 Electric Sales Campaign

By J. CHARLES JORDAN, Manager Publicity Department
Pacific Gas and Electric Company, San Francisco

AS a milepost marks a definite point on a road, so the aggressive sales campaign planned by the Pacific Gas and Electric Company in co-operation with other power companies, manufacturers, jobbers, contractors and dealers throughout northern and central California may be regarded as a milepost of progress on the road of electrical merchandising.

The drive, which is in addition to sales plans for the year involving a budget expenditure of half a million dollars, involves two major premises. The company will not sell lamp-socket appliances directly. It will encourage the sale of these appliances through the dealers. Direct sales efforts in cooperation with other branches of the industry will be confined to appliances consuming large wattage.

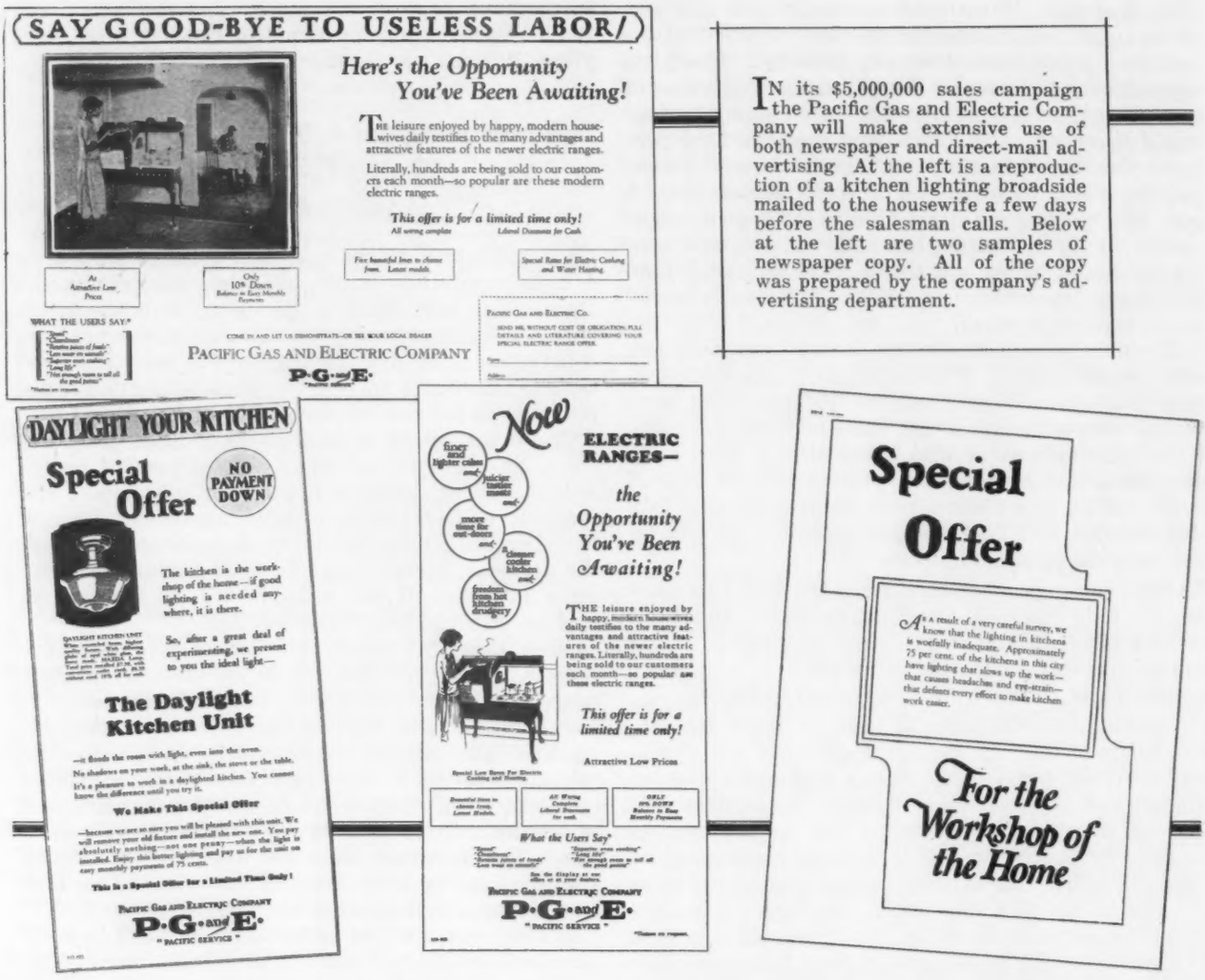
More than two hundred salesmen and sales engineers will be utilized. A bogie of 4,000 electric ranges representing an installed investment of $800,000 and 2,000 electric water heaters representing $200,000 installed has been set. In addition the sale of industrial heating appliances, electric trucks, refrigerators, domestic and commercial lighting will be sold intensively by a corps of trained men in each line. The program calls for the sale of 20,000 kitchen lighting units in five months. The first month's sales indicate that over 30,000 will be sold.

In the success of an undertaking of such importance advertising will play a prominent part. The present schedule, which is being augmented continually by co-operation from sources heretofore inactive, gives every evidence that the campaign will be an event extraordinary in the annals of electrical merchandising.

The Pacific Gas and Electric Company will run display advertising in 232 daily and weekly newspapers, using some 30,000 column inches of space, to emphasize the advantages of the increased use of things electrical. As a tie-in some 650,000 pieces of direct-mail literature will be used.

In operating the kitchen lighting plan a three-column, twelve-inch display advertisement will be published in the newspaper circulating in and about the district, in which the sales crew will work the week following the appearance of the advertisement. Three days prior to the salesman's call each lighting consumer in the district will receive a broadside. These broadsides will be deposited in the mail so as to tie in with the salesman's calls. After the territory has been covered a second call will be made, and prior to this call a sales letter will be sent. In this letter the sales made on the first call will be used as the basic sales argument.

Electric-range, water-heater and space-heating advertisements will be published in all the newspapers as above enumerated. Simultaneously these adver-


SAY GOOD-BYE TO USELESS LABOR/
Here's the Opportunity You've Been Awaiting!
THE leisure enjoyed by happy, modern housewives daily testifies to the many advantages and attractive features of the newer electric ranges.
Literally, hundreds are being sold to our customers each month—so popular are these modern electric ranges.
This offer is for a limited time only!
All wiring complete
Liberal Discounts for Cash
Five beautiful lines to choose from. Latest models.
Special Rates for Electric Cooking and Water Heating.
At Attractive Low Prices
Only 10% Down
Balance in Easy Monthly Payments
WHAT THE USERS SAY*
COME IN AND LET US DEMONSTRATE—OR SEE YOUR LOCAL DEALER
PACIFIC GAS AND ELECTRIC COMPANY
P·G·and·E·
PACIFIC GAS AND ELECTRIC CO.
SEND ME, WITHOUT COST OR OBLIGATION, FULL DETAILS AND LITERATURE COVERING YOUR SPECIAL ELECTRIC RANGE OFFER.
Name
Address
DAYLIGHT YOUR KITCHEN
Special Offer
NO PAYMENT DOWN
The kitchen is the workshop of the house—if good lighting is needed anywhere, it is there.
So, after a great deal of experimenting, we present to you the ideal light—
The Daylight Kitchen Unit
—it floods the room with light, even into the oven.
No shadows on your work, at the sink, the stove or the table.
It's a pleasure to work in a daylighted kitchen. You cannot know the difference until you try it.
We Make This Special Offer
—because we are so sure you will be pleased with this unit. We will remove your old fixture and install the new one. You pay absolutely nothing—not one penny—when the light is installed. Enjoy this better lighting and pay us for the unit on easy monthly payments of 75 cents.
This is a Special Offer for a Limited Time Only!
PACIFIC GAS AND ELECTRIC COMPANY
P·G·and·E·
"PACIFIC SERVICE"
Now
finer and lighter cakes and
juicier tenderer meats and
more room for out-doors and
a cleaner cooler kitchen and
freedom from hot kitchen drudgery
ELECTRIC RANGES—
the Opportunity You've Been Awaiting!
THE leisure enjoyed by happy, modern housewives daily testifies to the many advantages and attractive features of the newer electric ranges. Literally, hundreds are being sold to our customers each month—so popular are these electric ranges.
This offer is for a limited time only!
Attractive Low Prices
What the Users Say*
PACIFIC GAS AND ELECTRIC COMPANY
P·G·and·E·
"PACIFIC SERVICE"
Special Offer
As a result of a very careful survey, we know that the lighting in kitchens is woefully inadequate. Approximately 75 per cent. of the kitchens in this city have lighting that slows up the work—that causes headaches and eye-strain—that defeats every effort to make kitchen work easier.
For the Workshop of the Home

IN its $5,000,000 sales campaign the Pacific Gas and Electric Company will make extensive use of both newspaper and direct-mail advertising At the left is a reproduction of a kitchen lighting broadside mailed to the housewife a few days before the salesman calls. Below at the left are two samples of newspaper copy. All of the copy was prepared by the company's advertising department.

tisements will appear over the entire territory served, reaching a population of more than 2,200,000 people.

This general broadcast is made in an endeavor to lead the way for all those allied in the movement. Some 500,000 pieces of direct-mail literature will be used in connection with the electric-range activities. This direct-mail matter will not tie in as closely with the display advertising as is the case in the kitchen lighting campaign for the reason that the dealers will be more aggressive on the range and water-heater drive. Direct-mail literature will be sent to prospects taken from consumers' ledgers and followed in three days by a salesman's call. Every residential lighting consumer of $3 per month and over will be called upon by a salesman.

Display advertising, direct-mail literature and personal solicitation will be used in all branches of the campaign. Jobbers, manufacturers and dealers are putting their shoulders to the wheel.

The representatives of one line of ranges are conducting a continuous series of cooking schools in the various cities and towns. Another, in addition to special demonstrations, is running display advertising weekly in each of the leading daily papers. Another has purchased display space in the domestic-science pages of the newspapers and will run advertisements weekly appealing to the housewives. This range representative also is sending throughout northern and central California a truck with two models of ranges which are exhibited and demonstrated in the smaller towns and communities. Each range representative is furnishing 10,000 pieces of literature to be used as envelope stuffers for sending to consumers.

Dealer co-operation is probably the most interesting. Dealers that never have handled electric equipment before now are "getting into the game."

One furniture house, reported to be the largest west of Chicago, has put in a line of electric ranges. This house opened its drive Sept. 1, with a full-page spread on electric ranges in two of the leading western metropolitan newspapers. This one house alone will spend approximately $10,000 on electric-range advertising.

A billboard campaign for electric ranges, said to be the first of its kind, now is being posted by one of the leading furniture houses.

Manufacturers, jobbers, dealers and others are sending letters to the members of their organizations soliciting their support in promoting the sale of the lines carried.

This campaign is a great co-operative movement by the electrical industry, and its success will be measured is no small part by the advertising done.

Central Station Merchandising—A Study of the Programs of Western Companies

DURING 1925 the power companies of the eleven Western states will sell appliances valued at $8,000,000 to their domestic consumers. This represents one-third of the total appliance volume for this region. The major item on the program is 25,000 electric ranges, valued at approximately $5,000,000. In this article the merchandising programs of the major Western companies are reviewed and the policies followed in various districts discussed.

DOMESTIC electric appliances with a value in excess of $8,000,000 will be sold by the power companies of the eleven Western states to their residential consumers during 1925. This volume, representing approximately $4 per domestic consumer, is slightly less than one-third the total amount of appliances which consumers in this territory will purchase during the year. These facts are brought out in a study of the merchandising activities of the Western power companies for the first eight months of 1925. In this study returns were received from companies representing 85 per cent of the installed capacity of the region. The appliances include everything from Mazda lamps and curling irons to electric ranges.

During the year central-station commercial departments will dispose of the following appliances:

Electric ranges	$5,000,000
Electric water heaters	275,000
Air heaters (all sizes)	155,000
Electric refrigerators	150,000
Washing machines	850,000
Vacuum cleaners	300,000
Irons	150,000
Ironing machines	75,000
Table appliances	240,000
Kitchen lighting units	375,000
Miscellaneous appliances	50,000
Mazda lamps	400,000
Total	$8,020,000

Of the $16,000,000 to be spent by consumers for appliances bought from electrical dealers or from non-electrical outlets, the major portion will go for such devices as washing machines, vacuum cleaners, irons, table and miscellaneous appliances. This is true because practically all range business is done by the central stations on whose programs the electric range is the major item. This holds particularly for California where few companies during 1925 are merchandising any domestic appliances other than the electric range and water heater.

The excellent showings of many of the companies which are merchandising a complete line of appliances, especially those whose average annual sales per residential consumer are from $15 to $17, are offset materially by the showing of those companies which merchandise ranges only. Because of this policy, the average appliance sale per consumer for all companies in the region is exceedingly low in comparison—$4 as against $12 to $17. However, this average will be increased materially as a result of the aggressive campaigns announced by some of the California companies featuring ranges, water heaters, refrigerators and air heaters. It is believed that records as good as those of companies in the Northwest and Intermountain states could be achieved by those California companies which at the present time are devoting sales efforts only to the major appliances.

Table I shows the appliance sales by companies in the territory for the first eight months of the present year. The number of ranges is approximately 15,000 and water heaters 4,000. The annual quotas for these items as set up by the individual companies calls for the sale of 25,000 ranges and 7,000 water heaters, a record which in all probability will be exceeded. Some might consider the showing in the sale of electric refrigerators disappointing, as only three companies have devoted any efforts to the sale of this appliance so far this year. This situation will be remedied in 1926, however, when practically all companies will be pushing domestic refrigeration actively.

The rapid rise of the better-lighted kitchen movement is shown by the table. Nearly 40,000 lighting units have been sold so far this year, despite the fact that two major companies have yet to stage their annual campaigns.

Periodic Campaigns Featuring Specific Appliances

Practically all central stations that actively are merchandising engage in periodic seasonal sales activities featuring certain appliances, in addition to Christmas and June Bride campaigns. Ranges, refrigerators, washing machines, ironers, vacuum cleaners and kitchen lighting units receive the major amount of attention in such campaigns but percolators, irons, toasters and other devices frequently are featured.

The usual practice in such campaign is either to

TABLE I—MERCHANDISING ACTIVITIES OF WESTERN POWER COMPANIES FOR FIRST EIGHT MONTHS OF 1925

COMPANY	Per Cent of Total Installed Capacity 11 Western States	No. of Stores Offices Displaying Appliances	Ranges	Water Heaters	Air Heaters (1 kw. up)	Air Heaters (Less than 1 kw.)	Refrigerators	Washing Machines	Vacuum Cleaners	Irons	Ironing Machines	Table Appliances	Kitchen Lighting Units	Mazda Lamps	Miscellaneous
Calif. A	1.31	6	370	*	*	*	*	*	*	*	*	*	*	*	*
Calif. B	14.92	25	1,793	716	979	*	*	*	*	*	80	*	7,000	280,000	*
Calif. C	5.23	10	1,000	400	500	*	*	*	*	*	*	*	500	*	*
Calif. D	1.17	4	28	15	*	*	*	*	*	*	*	*	*	*	*
Calif. E	4.54	2	636	369	26	74	37	25	198	688	6	1,668	*	43,783	3,686
Calif. F	14.05	50	756	398	*	385	*	*	*	5,300	*	1,504	15,516	261,000	682
Calif. G	1.01	5	171	72	*	*	*	*	*	*	*	4	3,650	*	*
Calif. H	2.70	17	94	24	7	8	*	*	1	121	*	105	*	*	90
Ore. A	3.73	4	1408	201	286	403	†	153	149	668	58	848	2,973	76,550	†
Ore. B	0.91	20	281	217	†	36	23	184	460	910	26	581	1,408	15,975	380
Ore. C	1.30	3	959	125	28	11	5	†	†	†	1	†	550	†	†
Wash. A	4.12	25	908	824	†	49	86	55	359	847	68	991	3,252	†	†
Wash. B	4.09	29	4500	†	†	†	†	†	†	†	†	†	†	†	†
Wash. C	1.00	1	330	28	*	*	*	*	*	*	*	*	*	30,147	*
Idaho A	1.84	21	697	419	43	†	17	626	181	774	46	740	3,570	45,725	779
Mont. A	6.88	20	573	57	350	†	†	376	371	972	55	841	†	†	†
Utah A	5.13	31	729	64	95	†	69	1,309	314	2,035	64	646	2,389	90,329	322
Nev. A	.....	1	*	*	*	35	*	*	37	114	*	96	†	†	†
Colo. A	2.89	14	131	12	25	272	173	1,024	722	3,592	143	1,224	465	244,100	1,302
Colo. B	0.85	7	282	18	*	*	28	97	65	766	19	343	72	38,287	2,300
B. C. A	3.21	7	238	167	8	65	†	285	310	821	21	435	46	20,000	1,200

*Will not merchandise this appliance in 1925.
†No record.

feature a special price or unusually advantageous terms in the case of the major appliances. Where price concessions are made it is customary to allow dealers to participate in the campaign on the same basis as the central station. Where long terms are offered, the power company in the majority of instances carries the paper for appliances sold by dealers. Special advertising, both newspaper and direct-mail, is employed in arousing consumer interest in the appliance featured.

An idea of the type and scope of these campaigns can be gained from Table II, which shows the seas-

Table II—Seasonal Merchandising Campaigns

MONTH	Utah Power & Light Company	Public Service Co. of Colorado	Washington Water Power Company	B. C. Electric Railway Company	San Joaquin Light & Power Corp.	Southern Colorado Power Company
January	Clean-up					
February	Ironers	Lamps and Fixtures	Kitchen Light'g Units		Vacuum Cleaners	Small Appliances
March	Washing Machines	Vacuum Cleaners	Ironers		Vacuum Cleaners	Small Appliances
April	Kitchen Light'g Units	Washers, Irons	Ranges		Percolators	Vacuum Cleaners
May	Ranges and Refrigerators	Ironing Machines	Ranges	Ranges, Vacuum Cleaners	Percolators June Bride	Vacuum Cleaners
June	Ranges and Refrigerators	Refrigerators	Ranges		Fans, Cookers June Bride Refrigerators	June Bride Washers
July	Ranges and Refrigerators	Refrigerators, Irons	Ranges		Fans Refrigerators Cookers	Washers
August	Ranges and Refrigerators	Refrigerators	Irons	Ironers	Fans Refrigerators Cookers	Ranges
September	Ranges and Percolators	Refrigerators	Commercial Lighting Units	Ranges Washers	Vacuum Cleaners Toasters	Ranges Vacuum Cleaners
October	Washers and Ironers	Vacuum Cleaners	Air Heaters, Commercial Lighting Units	Vacuum Cleaners	Vacuum Cleaners Toasters Waffle Irons	Washers
November	Ranges		Washers, Ironers		Waffle Irons Air Heaters Christmas Gifts	Christmas Gifts
December	Christmas Gifts	Christmas Gifts			Christmas Gifts	Christmas Gifts

onal merchandising activities of some of the power companies. Excellent sales records have been established in some of the campaigns conducted in this manner. Companies have sold as many as 15,000 kitchen lighting units, 2,000 electric cookers, 800 ranges, and 750 washing machines in individual campaigns.

Compensation of Salesman

The average number of salesmen employed varies with the companies, ranging from three in the case of those which are engaged only in the sale of electric ranges, up to 300 in the case of the Pacific Gas and Electric Company, which is engaged in an active load-building campaign of major proportions. For the twenty-two companies reporting in this survey the total number of salesmen employed is in excess of 600.

Most companies compensate salesmen on a salary-and-commission basis, although many employ them on straight salary. Opinion is divided as to which of these methods is the more satisfactory. The policy of employing salesmen on a straight commission basis is falling into the discard on account of the unsatisfactory type of salesmen recruited for this type of work. Some companies, however, still compensate outside men on the basis of straight commission, the practice being to give a guarantee of $75-$100 with a 10 or 12 per cent commission.

House-to-house salesmen are employed largely on ranges, kitchen lighting units, and in the special campaigns on the appliances featured at that particular time.

Average Sales per Residential Consumer

The average annual merchandise sales per residential consumer in the case of companies handling a complete line of appliances from ranges to curling irons vary between $8 and $17, with the companies doing approximately 60 per cent of the total electrical merchandise business in the territory served.

TABLE III—Average Annual Merchandise Sales per Residential Consumer.

COMPANY	Average Sales per Consumer	Estimated Volume of Power Company (Per Cent)
Montana Power Co.	$ 5.95	75
Pacific Power & Light Co.	8.27	40
Idaho Power Co.	17.00	60
Utah Power & Light Co.	10.85	75
Public Service Company of Colorado	13.68	60
The Washington Water Power Co.	12.00	60
San Joaquin Light & Power Corp.	15.00	50
B. C. Electric Railway Co.	3.30	50
Southern Colorado Power Co.	16.00	40

In cases where companies only merchandise ranges, water heaters and air heaters the average sale per consumer is approximately $4, with the power company doing less than 25 per cent of the business in the

Think of This!
A Giant Turnover
ELECTRIC TOASTER
for only
3.95
$1.95 DOWN
You have always wanted a good Electric Toaster
Here it is at only half what you expected to pay
Delicious, Crispy-Brown Electric Toast
Takes the Largest Size Slice of Bread
VALLEY ELECTRICAL SUPPLY CO.
FRESNO
Sale Starts Monday September 14th
All Out of Town Mail Orders Shipped Promptly
2 for $3
Thor Electric Washer
and
Thor Electric Ironer
Both FOR $3
Down—in Our Combination Offer
When you use one, you'll want the other. Use them together and know the joy of a DRUDGELESS washing and ironing day.
SPECIAL DISPLAY IN OUR SHOWROOMS
If We Had Marked Time
Public Service Company
OF COLORADO
SERVE
BOUNTIFUL BREAKFASTS
THIS WINTER
SOUTHERN COLORADO POWER CO.
Why Not Cook at the Table, Then Take Your Exercise Out-of-Doors
News Item—
You Need a Grill—Toaster—Percolator
We herewith extend a sincere welcome to THE PACIFIC STATES ELECTRIC COMPANY upon the establishment of their San Diego branch
SAN DIEGO CONSOLIDATED GAS & ELECTRIC COMPANY
Main 64
887 Sixth St.
Do You Stand on a Chair
every time you connect your toaster, iron or cleaner?
Do you move the washing machine every time you use it because there is no socket near by?
CONVENIENCE OUTLETS IN EVERY ROOM
Do you remove a lamp every time you use your sewing machine?
A few CONVENIENCE OUTLETS properly located will stop all this bother. The CONVENIENCE OUTLET is simply a place to use electricity, located at the point of use. There should be at least one in every room.
SOUTHERN CALIFORNIA EDISON COMPANY
GOOD COFFEE
—adds the finishing touch to any meal
The ELECTRIC PERCOLATOR
is the best medium for securing it.
SPECIAL PRICE
"Cash and Carry"
$3.75
DESCRIPTION
What you must do to get one:
1. Call at our office
2. Select a percolator
3. Pay cash—$3.75
4. Carry it home
SOUTHERN CALIFORNIA EDISON COMPANY
For a Limited Time Only We Will Allow You
$1.00 for Your Old Iron
on
The American Beauty
Public Service Company
OF COLORADO
Immediate Warmth for Chilly Evenings
FOR ONLY
95c down
95c down
Public Service Company
OF COLORADO

Typical samples of electric appliance advertising which appeared in Western newspapers during the current year over power company signatures.

Samples of successful electric range and refrigerator newspaper advertising used by Western power companies during the current year.

territory. Previous studies conducted by the Journal of Electricity (April 15, 1924, p. 279, and Oct. 15, 1924, p. 271) and Electrical World (April 26, 1924, p. 822) show that in communities where the central station is merchandising actively, the strictly electrical dealer is doing relatively larger business than the dealers in communities where non-electrical outlets are doing the volume of business which otherwise would be done by the power company.

Figures showing the average annual merchandise sales and the estimated percentage of the total electrical business done by the central station in its territory are shown in Table III.

Electric Range Merchandising

Excellent records have been established this year by Western power companies in the sale of electric ranges. Total sales for the first eight months of the year approximated 15,000 ranges with a total quota for the year of approximately 25,000, with every likelihood of the quota being exceeded. The most spectacular record has been made by the Puget Sound Power & Light Company which has added 4,500 ranges to its lines during the year and expects to add 6,000 before the end of 1925, or an increase for the year of 100 per cent in the total number of electric-cooking consumers. The Pacific Gas and Electric Company, with its quota of 6,000 ranges established Aug. 1, 1925, gives every promise of reaching the goal set for the end of the year.

Two six-week campaigns were staged by The Washington Water Power Company with considerable success. In the first, 375 Hotpoint ranges installed complete with water heaters were sold on the basis of $9.75 down and the balance over a period of 24 months. In the second, 469 Westinghouse ranges were sold on the basis of $4 down. The Montana Power Company sells ranges, installed, at its cost plus 10 per cent, with a small down payment and long terms. During its range campaigns the Northwestern Electric Company reduces the initial payment from $30 to $15 and gives the consumer a premium of from $15 to $20 on the retail value of the range.

The California Oregon Power Company does not sell ranges directly to its consumers, but co-operates with electrical dealers in their sale. Considerable success was achieved in a campaign during the summer that is described on another page of this issue. For details regarding the ranges sales activity of the Pacific Gas and Electric Company and Great Western Power Company see Journal of Electricity, July 1, 1925, p. 33, and Aug. 1, 1925, p. 106.

Electric Refrigeration

Little progress has been made in the development of domestic electric refrigeration this year, but practically every power company has announced that this business will be a major commercial department activity in 1926. The Public Service Company of

Colorado sold approximately 200 refrigerators during the summer months as a result of a special campaign which featured a 30-day free trial offer. Only the high-class residential section of Denver was canvassed on this basis, and but few refrigerators installed on a trial basis were removed.

The Utah Power & Light Company met with considerable success in its initial refrigeration sales efforts and is planning for an intensive campaign next year. The Washington Water Power Company also did some pioneer sales work in this field, using the 30-day free trial plan. As stated before, nearly every major company plans intensive refrigeration sales work next year, and the industry is confident that the record made in the sales of electric ranges by the Western central stations will be equaled in this new domestic load-building field.

Trade Policy Regarding Dealer Co-operation

Dealer co-operation has been developed to a high degree by the Western central stations, especially in California. Where co-operative leagues have been organized, the power companies are the chief contributors to these organizations. In other districts the companies are leading the way and setting the pace for the remainder of the industry in merchandising appliances.

In practically all districts when special campaigns are engaged in, the dealers are given the opportunity to participate in these campaigns on the same basis as the power company. In nearly all cases the major amount of appliance advertising is being done by the power companies. Special financial assistance is rendered the dealers in many districts, the power company carrying the dealer's term-payment paper on the larger appliances.

In California practically all small appliance business is left to the dealer and the non-electrical outlets. The recently announced load-building campaigns in this state, together with the special efforts which are being made to enlist the support and co-operation of the dealers, are doing much to improve the relationship between the various branches of the industry as well as the non-electrical outlets.

Except in cases of special campaigns, the majority of the companies merchandising maintain list prices.

Many unique ideas in the way of dealer co-operation have been developed. For instance, the British Columbia Electric Railway Company, Ltd., allows the dealers a special rate of 2 cents per kw-hr. for all energy used in the demonstration of appliances. Several companies allow dealers to use district offices for the display of appliances. Others place range demonstrators at the disposal of dealers desiring to demonstrate ranges in their stores. The San Joaquin Light & Power Corporation has placed the services of a member of its engineering department at the disposal of contractors in an advisory capacity for making up specifications and laying out electrical plans for new buildings.

The Northwestern Electric Company allows dealers a 15 per cent commission on all range sales made by them, the company carrying the term paper. This company also places ranges on consignment in the stores of dealers displaying appliances.

The California Oregon Power Company sells no appliances of any character. However, it does use its purchasing power in buying electric ranges in carload lots for the dealers.

The Southern Colorado Power Company holds periodical meetings with contractors and dealers for the purpose of keeping them in close touch with its merchandising activities. When special inducements are offered on appliances, dealers are given an opportunity to participate. The company makes the point of not attempting to monopolize trade by handling several makes of any one appliance, confining its activities to appliances of three manufacturers and leaving others for the dealers.

Tying in a Toaster Sale with a Trade-at-Home Campaign

THAT advantage may be taken of matters of community interest and be made to pay in terms of increased good will and commercial profits is evident in the case where a central station consummated a good piece of business in one day by featuring a turn-over toaster demonstration and sale which was tied in with the community's "trade-at-home" campaign.

The city was Boulder, Colo., with a population of 12,000. Boulder is about 30 miles from Denver. Denver dealers have found it profitable to run trucks there daily. Bread is one of the commodities widely handled in that manner. Severe inroads were made on Boulder bakeries. One firm had closed its doors and another had been turned over to its creditors.

For several weeks one of the two daily papers—The News Herald—had been bludgeoning the populace through editorial and news columns to buy and eat only Boulder-made bread. The American Legion post had taken up the campaign. It had been discussed at men's luncheon clubs, women's sewing clubs, and on street corners.

At the height of the agitation the commercial manager of the Public Service Company decided to run a one-day special on toasters, offering them for $3.50 each, on terms.

"Why not give them fifty cents worth of bread as a premium and specify Boulder-made bread?" suggested the advertising man. "I'll hustle out and see the bakers and arrange with them to accept certificates from us for the bread."

There are four bakeries in the city. All gladly accepted the chance to tie in on the plan. One of them ran an advertisement the night before the sale featuring the toaster. The paper which had been championing the buy-at-home movement was so struck by the idea that its editor devoted his leading editorial to the sale, and did it the evening before the sale took place, at that.

As a result, the toaster stock was gone long before the sun set. The total advertising cost to the Public Service Company was something less than $10. For that sum it received its own advertisement, a boost by one of the bakeries, and invaluable publicity in the editorial columns.

Spring Test of Electric Ranges in the Northwest*

Of such timely interest to western utility companies and electrical dealers are the results of the first tests made by the range survey subcommittee in the Northwest that the Journal of Electricity welcomes the opportunity to present its readers with these results afforded by the publication last month of a serial report covering the spring tests in Spokane and Boise.

MARKING a milestone in the investigation of the electric range load, the National Electric Light Association recently has published a report on the results of the spring tests, 1925, conducted in Spokane, Wash., and Boise, Idaho, by the range survey subcommittee of the electric cooking and heating committee of the Commercial National Section. This subcommittee, appointed in the fall of 1923, first occupied itself with determining what data were desirable, and with arranging ways and means to obtain these data. After preliminary meetings had led to an agreement on a program of work, approval was given and money provided for a series of field tests to be carried on during the entire year of 1925 in Spokane and Boise, to reveal certain facts surrounding the serving of small and large groups of ranges. Some of the data to be made available from these tests were: average demand of range, annual kilowatt-hour consumption of range, diversity of range demand, load characteristics of a large group of ranges, 10, 25, 50 or more, diversity between range peak and system peak, and figures on costs of range service, both to the customer and the company; and in addition, similar data with respect to water heaters, small appliance load, and lighting load in its relation to range load were to be compiled.

The subcommittee appointed to work out the adopted program consists of Lewis A. Lewis, sales manager, The Washington Water Power Company, Spokane, chairman; M. T. Crawford, superintendent of distribution, central district, Puget Sound Power & Light Company, Seattle; Lester R. Gamble, assistant engineer, The Washington Water Power Company, Spokane; and F. J. Rankin, chief engineer, Idaho Power Company, Boise. Early in the current year this committee proceeded to put the various tests into operation, and though it will be some time before complete results will be available, it compiled the results of such tests as were available at this time into the report referred to above. An abstract of this report, together with extracts from it including some of the charts and curves, is presented herewith.

Perhaps the most interesting and significant finding of the committee, as shown in the report, had to do with discovering the average demand of the individual range and the average simultaneous demand of a group of ranges. Certain superficial tests and guesswork had led to a number of different opinions about these demands; as established by tests on seventeen individual ranges over a week's period each, the average demand per range was found to be 3.88 kw. In commenting on these tests the report states that a greater number of individual range demands would be tested to check this figure, but expressed the belief that these additional tests would not change it greatly.

From the data obtained in these tests, curves, shown in Figs. 3 and 4 of the report, reproduced herewith, were calculated showing the change in kilowatt demand per range as the number of ranges is increased. The significant fact disclosed here is that for a group of over 50 ranges an average demand per range of less than one kilowatt is certain. The report's comment on these curves follows:

> The curves marked "Upper Limit" and "Lower Limit" represent those values of maximum and minimum demands as found in combinations made. The curve marked "Average" is then the average of the points determined and not an average on the two limiting curves. In order that the curve on Fig. 3 could be used for a larger number of ranges the curve on Fig. 4 was plotted covering a total of 4,000 ranges. This could be done with a reasonable degree of accuracy by estimating the limits on the diversity curve in Fig. 2. These limits were estimated to be between 5 and 6 for 4,000 ranges. The value of 5.5 was used, thus making the kilowatt demand per range 0.700 for 4,000 ranges. Referring again to Fig. 3, it will be noted that certain points are designated. Point "A," which was determined on the superficial tests made in Sporecent Boise tests and reported in Appendix A, is right on the curve. Points "D" and "E," as reported in the Seattle Apartment tests last spring, are also on the curve. Point "G," which was determined on the superficial tests made in Spokane a year ago, falls on the curve. Points "B," "C," and "F," which are demands taken from the Seattle and Boise tests, do not fall on the curve but are within the limits established.

Demands of Different Residential Services

The report then proceeds to a discussion of the tests for simultaneous demands on about 150 ranges, water heaters, small appliance consumers, and lighting consumers, presenting the demand curves of a week's run on each of these different classes of service. Fig. 5 of the report, reproduced herewith, shows the demand curve for 140 ranges, indicating a peak of 122 kw., or 0.871 kw. per range, falling on Wednesday, April 1, between 5:45 and 6 p.m. Slightly

* An abstract of the serial report of the Electric Cooking and Heating Committee, Comercial National Section, N. E. L. A., published August, 1925.

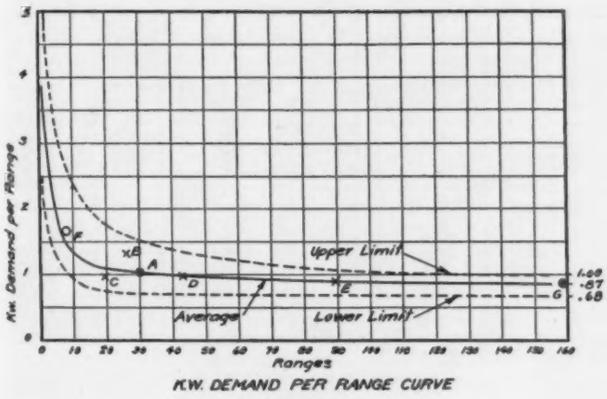


Figure 3.

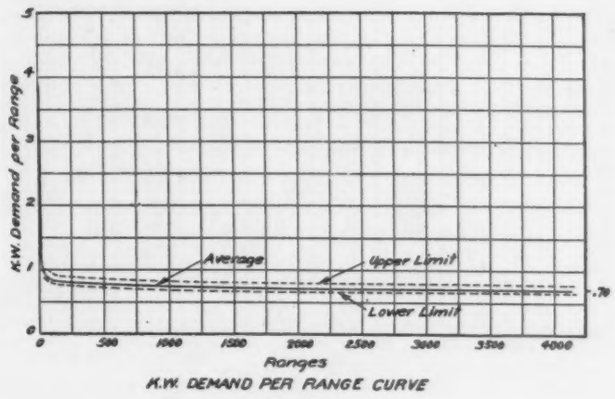


Figure 4.

lower peaks occurred daily except Sunday at about this same time. In another test on 110 ranges a peak demand of 0.95 kw. per range was found. Discussing the two curves the report says:

Both curves are typical range curves showing a morning and noon peak of about equal value but a decided evening peak. The three peaks occur on each day of the week except Sunday where there is but one peak about 1 p.m.

Discussing the water heater test, curve of which is shown in Fig. 7, reproduced, the report explains particular conditions influencing this curve as follows:

The water heater as installed in Spokane is a part of the range service, with the range metered and the water heater on a flat rate. A double-throw switch is provided with this combination so that the range ovens cannot be used when the water heater is in service or vice versa. The effects of this arrangement are clearly shown by the load curve on Fig. 7. For the three range peaks of the day there is a corresponding falling off of water heater demand and with the greater range peaks the smaller becomes the heater demand. These curves show about 76 per cent of the water heater load is on during the range peak.

Tests on the combined range-and-water-heater load of 150 consumers showed curves characteristic of those for range alone, only with higher peaks. A demand of 1.48 kw. per consumer was recorded at 6 p.m. of the peak day of the week of this test. Tests on 100 customers for the demand imposed by lighting and small appliance load indicated a peak of 0.208 kw. per consumer occurring Thursday, April 23, at 8:30 p.m. The report points out that at this season of the year this peak is two hours and forty-five minutes later than the range peak.

A test then was run on the combined load of the 150 consumers the week of April 30 to May 6, as shown in Fig. 10, reproduced, and the report says of this test:

It is seen that the curve has the same general characteristics as that for the range. There is a slight peak, however, between 8 and 9 p.m. which is due to the lighting load. The peak day was on Friday, the demand occurring at 5:45 p.m. This demand was 225.5 kw. or 1.5 kw. per consumer.

Comparison of Range Demands Among Different Classes

Believing that the similarity in habits of certain classes of consumers influenced by their occupations would have a bearing on their use of the electric range, and that the different habits of different classes would cause a difference in the diversity factor as between classes, the committee then ran tests to show the use of ranges by these classes. The following three divisions were established arbitrarily: industrial—small and medium houses—railroad men; average residential—small and medium houses—miscellaneous; and high-class residential—large houses—business men. To simplify testing, fifteen districts of the city in which a number of similar classes of consumers were concentrated were marked off. Tests were made on 20 small, 20 medium and 20 large residential range consumers, and also on 20 range consumers who were industrial workers. Commenting on the curves resulting from these tests, the report says:

It will be noted that the curves for the different-sized residential consumers all have the same general shape varying only in peak kilowatt demands and kilowatt-hour consumption. The morning and noon peaks are of about the same size and are considerably smaller than the evening peak, which practically always comes during the 15-minute period just before 6 p.m.

The demand curve of the 20 industrial consumers, who are mostly employees in railway shops or railway trainmen, shows a considerable variation from the other type of consumer in that the noon and evening peaks are about equal,

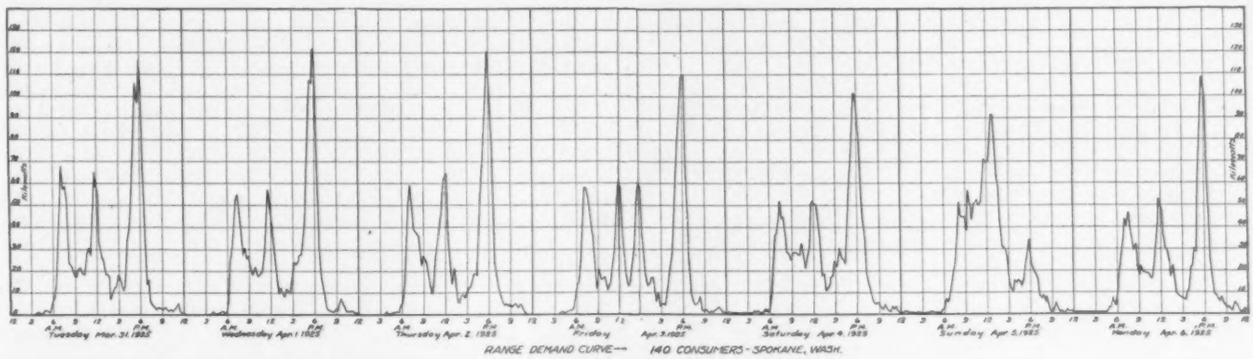

Tuesday Mar. 31, 1925
Wednesday Apr. 1 1925
Thursday Apr. 2, 1925
Friday Apr. 3, 1925
Saturday Apr. 4, 1925
Sunday Apr. 5, 1925
Monday Apr. 6, 1925
RANGE DEMAND CURVE— 140 CONSUMERS - SPOKANE, WASH.

Figure 5.

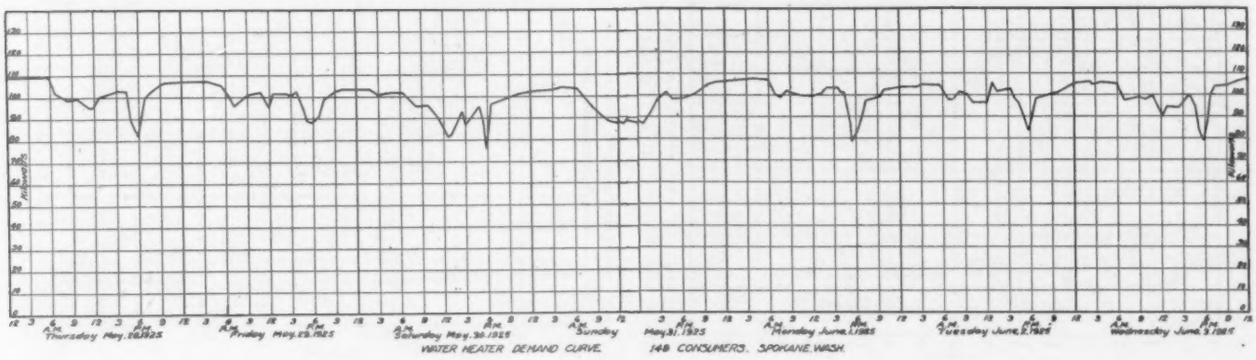


Figure 7.

the noon peak, in most cases, slightly exceeding the evening peak. The large noon peak is undoubtedly due to the fact that most of the heads of families are employed near home and are able to be home for the noon meal and that the time for the noon meal is limited to one definite hour by the nature of their employment. Another very noticeable difference is that there is a very decided peak at six o'clock on Sunday evening which is almost entirely absent from the other curves. This can be explained by the fact that, being railroad men, some of them must work on Sunday the same as on other days and also, being accustomed to two large meals on week days, they eat two meals on Sunday also.

In order to show what part each particular type of service plays in building up the residential load, a chart, upon which was plotted the curves of the different loads on the peak day, Wednesday, April 1, for the 150 consumers, is shown in the report. It emphasizes the decrease in the water-heater demand during the range peak, showing the effect of the double-throw switch on the range and water-heater service.

Effect of Range Load on Lighting Feeder and System Peak

Fig. 15 of the report, reproduced, shows the effect of the range load on the total load of the lighting feeder. Explaining and commenting on this chart, the report says:

On the basis of the tests for 150 ranges the total range, water-heater, and lighting loads of Spokane, Wash., were calculated. The curves of these loads are shown on Fig. 15 for the maximum day, Wednesday, April 1. Again it will be seen that the range load has no effect on the total residential load. feeder load curve. The lighting peak occurs about one hour and forty-five minutes later than the range peak during this season of the year, and is so much larger than the range peak that the range load has no effect on the total residential load. In winter when the lighting peak is near six o'clock the range peak will be added to the lighting peak and therefore will determine the total residential load peak demand.

A chart also is shown in the report on which are plotted the curves for April 1 of the Spokane district lighting load, the Spokane district total load, and the total load of the entire system which, of course, includes a considerable load outside of Spokane. The report points out that there is a similarity between the curves of the lighting load and of the total load within the Spokane district, but that no similarity exists between these curves and that of the total system load. It is evident that the numerous types and kinds of load existing outside of Spokane are so much greater and different than the city load that the city load does not control the characteristics of the load curve of the system.

Load Data and Revenue

To round out the results of the Spokane test, two tables of load and revenue data are given. These tables with the comment thereon follow:

Time did not permit making a connected load survey of the districts tested. The range and water-heater data were already available. These data together with other information are covered in Table I. The figures as shown in this table are

TABLE I
Load Characteristics of Average Individual Consumer Based on 150 Consumers in Spokane, Wash.

Items	Range	Light and Appliance	Range, Light and Appliance	Water Heater	Total Load
Kw.hr. for week of test	24.0	8.46	32.46	114.5	147.0
Average kw	.143	.05	.193	.682	.875
Peak kw.	.87	.207	1.077	.738	1.50
Load factor (15 min. weekly)	16.4%	24.3%	17.9%	92.5%	58.3%
Connected load, kw.	7.14	.....	.....	.814	.....
Demand factor (15 min. weekly)	12.17%	.....	.....	90.7%	.....

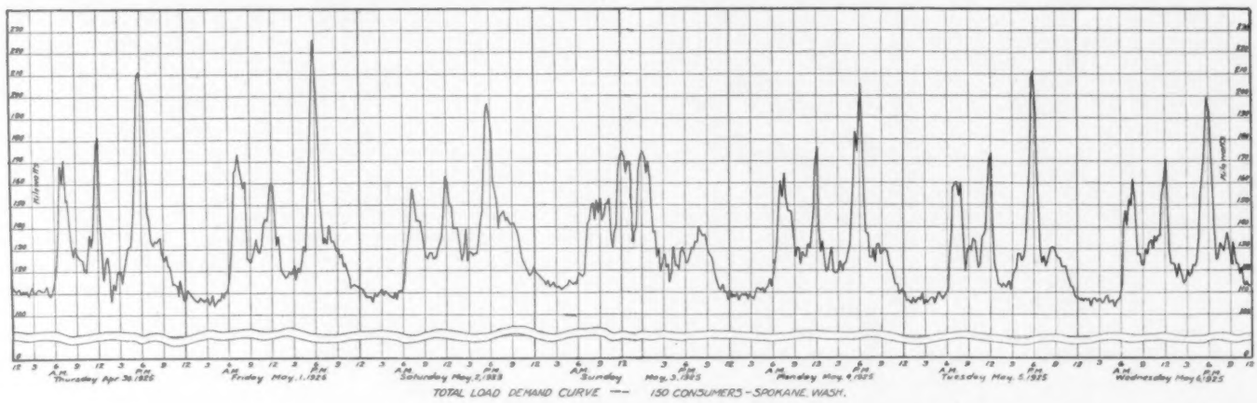


Figure 10.

for the average individual consumer and based on the tests of 150 consumers.

Table II shows the peak demands and annual revenue for the 3,000 range users in Spokane. The peak demands were obtained by calculation from the above tests and are therefore

TABLE II

Annual Revenue per Consumer Based on 3,000 Range Consumers, Spokane, Wash.

		Kw.	REVENUE		
	Kw-hr.	Peak	Total	Per Kw-hr.	Per kw. of Demand
Lights and appliances	400	0.16	$21.80	5.45c	$136.00
Range	1490	0.70	44.70	3.00c	64.00
Lights, appliances and ranges	1890	0.86	66.50	3.52c	77.30

lower than the annual peaks which occur during the winter months. However, on the basis of the demands just determined, it is found the annual revenue per kilowatt of range demand is $64 and for the total load $77.30.

In conclusion the report states that, "It is certain that the method being used and followed will give the information desired for the final report," and that, "No definite conclusion can be cited at this time since all seasons of the year must be investigated before such can be determined."

Boise Tests

Appended to the general report is a report of tests made at Boise, April 25 to May 25, 1925. Two series of tests were run: first to determine the simultaneous demands of nine ranges, nine water heaters and nine lighting services; the second to determine the simultaneous demand of thirty ranges. In the first test, on the nine combined services, the peak demand over a two weeks' period was found to reach 2.47 kw. per consumer on a Monday between 5:45 and 6 p.m.

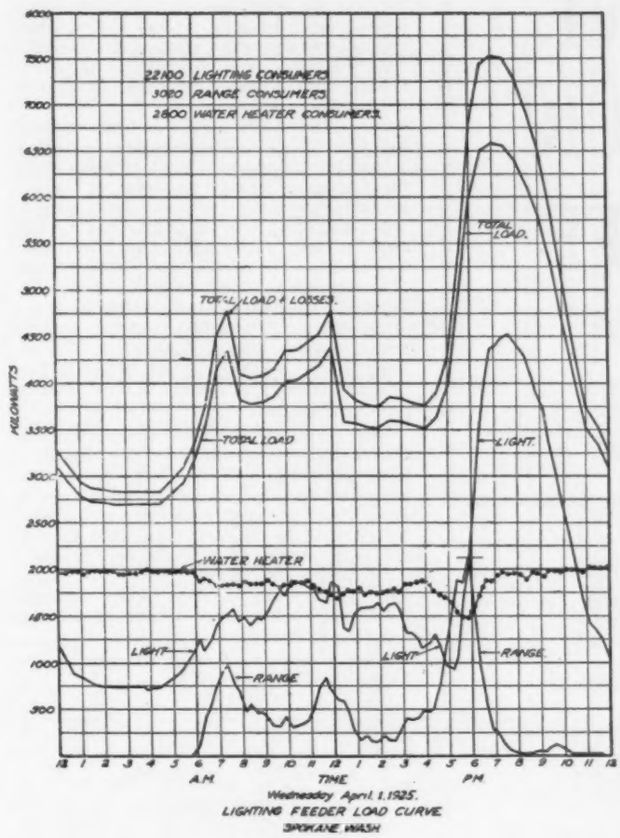


Figure 15.

The average daily consumption during this period was 23.53 kw-hr. per consumer. The test on the thirty ranges, also continued over a period of two weeks, indicated a peak demand of 1.03 kw. per range on a Wednesday at about 6 p.m.

Commenting on the special conditions influencing the results of the first test, the report says:

> The demand curves for test No. 1 show that the water-heater demand occurs at about the same time as the range demand. This is due very largely to the fact that no automatic or mechanical devices of any nature are used for disconnecting the water heater at the time the range is in use. The rate under which water heating service is furnished is extremely low and there is very little incentive for economy on the part of consumers using this class of service. Of the nine water heaters covered by test No. 1 only one was provided with an insulating cover of any description. It should also be pointed out that mangles are connected to the range circuits and that domestic appliances may be used on the range circuits by means of special outlets provided on the range or elsewhere. On account of this provision it is believed that the range demands reflect almost entirely the use of domestic appliances and that the lighting demands are those created by lighting only.

"One Good Sale Deserves Another" Placed in Successful Operation

THAT a sale is not entirely a success unless it leads to other sales to the same customer, is a recognized principle of good merchandising. One company, the Valley Electrical Supply Company, of Fresno, Calif., has just launched a third appliance campaign upon that principle, and is reported to be succeeding with it as well as it did with two previous campaigns.

As a result of an electrical percolator campaign early in the year, 700 percolators had been sold to customers of the San Joaquin Light & Power Corporation, of which the Valley Electrical Supply Company is a subsidiary. Following up the percolator sales with a sale of electric fireless cookers, 2,000 of these appliances were sold. (Journal of Electricity, Sept. 1, p. 183.)

To establish a link between these new customers and the dealer, a little cookbook designed for use with the cooker was mailed to each purchaser, accompanied by a letter stating that the recipes had been especially prepared and tested for them.

With this contact established, the Valley company was ready to launch a follow-up campaign for electric toasters. To each purchaser of a cooker was sent a letter beginning, "Dear Madam: Presuming you like toast, as most folks do, and being so absolutely sure you have enjoyed your electric cooker, we just couldn't help taking this opportunity to tell you about a wonderful ELECTRIC TOASTER which we are going to sell for only $3.95."

A circular accompanied the letter, and newspaper advertisements served as daily reminders of the sale. A special easy-payment plan was offered, and at the beginning of this third of a series of appliance sales campaigns, the toasters were selling at a rate which presaged results to exceed those in the previous two. Thus tactfully introduced, the following up with a new appliance sale to a satisfied customer on a previous sale would appear to be a natural and easy mode of merchandising.

BETTER MERCHANDISING

"Do You Love Your Wife?" Query Sells Ranges

Teaser Campaign of Medford Power Company and Dealers Creates Interest and Results in Increased Sales

In an era of question marks, characterized by such unanswerable queries as "What is your husband doing?" and "Where is your wandering boy tonight?" a campaign for the selling of domestic appliances capitalizing this curiosity-arousing method, ought to be successful, if the results of popular magazines and movies are to be taken as examples. So reasoned the California Oregon Power Company and the electrical merchants of Medford, Ore., in planning their summer range sale. That they had hit upon a human weakness too common not to yield returns was demonstrated in the results of a thirty-day range sale in July and August.

"Do you love your wife?" was the question slogan they used to effect. And evidently to justify himself in the face of this query, every husband in Medford came down town to find out what it was all about, bringing with him, of course, his wife as evidence of good faith. It was then that the first effects of this unusual sales appeal were brought about. Particulars of the entire campaign, however, are interesting and novel.

The special thirty-day electric range campaign was put on by the California Oregon Power Company in Medford, Ore., during the period from July 15 to Aug. 15, 1925, in co-operation with the two local electric dealers to stimulate range sales during a normally dull season.

The active campaign was preceded by a "mystery" campaign of about ten days' duration, in which "teaser" posters, windshield stickers and newspaper advertisements were used to good advantage. The posters consisted of heavy cards with the query "Do you love your wife?" appearing in prominent black letters on a white background. These posters were placed at night along the highway at a distance of about 300 ft. apart for nearly five miles north and five miles south on the Pacific Highway, which runs north and south through Medford; also five miles east and five miles west on two of the main traveled roads entering the city. In addition, about 200 of these posters were placed in prominent locations within the city limits of Medford. This work was done by company employees, who were admonished to observe the utmost secrecy concerning the posters. Two reliable boys were employed to place the automobile stickers on the windshields of cars wherever the owners would permit them to do so.

A quarter-page display advertisement carried the same query in the local newspapers, as did also several lines of locals which were scattered throughout the paper. A series of special news stories was prepared to stimulate interest in the mystery stunt and appeared nearly every day in the local papers. A slide in a local motion picture theater asked the question "Do you love your wife?" at every afternoon and evening performance.

The culmination of the "teaser" campaign was reached when a parade was staged on the downtown streets on a busy Saturday night. The parade was led by a brass band on a large truck and consisted of a number of trucks, delivery and touring cars, most of which carried at least one of the special model electric ranges which were featured during the campaign which followed.

Each of the trucks and automobiles was equipped with a set of banners, one on each side, containing such wording as "Do you love your wife? Prolong her life. Buy her an electric range. $15-down payment puts one in your home," and other copy of a similar nature. One float which attracted a great deal of attention portrayed very graphically the comparison between the old-style hot kitchen with the old wood range and the new-style cool kitchen with the electric range. Large thermometers on each one of these displays registered the temperature which prevailed in each of these kitchens. A large crowd was on hand to witness the parade, considerable curiosity and interest having been aroused by newspaper stories and notices which stated that the answer to the all-important question "Do you love your wife?" would be revealed on the downtown streets Saturday night at 8 p.m.

The entire campaign was built around the sale of the electric range, **installed** and **ready to use** at a cost of $15 down, the balance being payable in equal monthly payments to suit the customer but extending over a period not to exceed a year. Although one particular model range was featured throughout the campaign, special terms were allowed on all makes and models of electric ranges. It was felt that the results which were achieved through this campaign were very good for a town the size of Medford, a total of 75 ranges having been sold.

Out of 2,110 domestic consumers of this company in the city of Medford, approximately 625 of these customers are electric range users, which is a saturation of nearly 30 per cent notwithstanding the fact that the power company makes no attempt to merchandise ranges or appliances of any kind but refers this business to the electric contractor-dealers, of which there are but two in Medford.

There was no attempt to carry on a house-to-house campaign.

Some of the trucks used in the parade in Medford, Ore., answering the "Do You Love Your Wife?" query and pointing out that efficient home electrical equipment saves a wife's health

ELECTRIC IRONER DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1925

A list of Electric Ironer Manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way, mention the Journal of Electricity.

Key to Abbreviations
E—electric heat
G—gas heat
Gn—gasoline heat
Wx—Westinghouse
GE—General Electric
R&M—Robbins & Myers
Dom—Domestic
WE—Western Electric
B—belt drive
G—gear drive
FC—foot control
HC—hand control
A—automatic
VM—various models

Manufacturer	Trade Name	Shipping Weight (lbs.)	Dimensions (floor space)	Length of Rolls (in.)	Heat for Rolls	Wattage for Rolls	Motor: Make	Motor: H. P.	Drive	Control	Speeds	Price: East	Price: West of Rockies	Western Sales Representative	Western Distributors	Nearest Point At Which Repair Parts May Be Obtained.
Altorfter Bros. Co. Peoria, Illinois	"A. B. C."	291 355	33x25	26 44	E G E G	1350 2700	Wx Wx	1/6 1/6	B B	FC FC	....	$145 $125 $200 $165	$155 $135 $210 $175	**W. E. Peters** 89 E. 12th St., Portland	**A. A. Wilson** 612 S. Spring St., Los Angeles **E. W. Murray Lighting Co.** 313 Riverside Ave., Spokane **The Electric Service Co.** 175 Park St., Portland	Western Distributors
American Ironing Machine Co., 844 W. Adams St., Chicago, Ill.	"Simplex"	VM	VM	26 to 56	E G Gn	VM	.....	....	B	HC	1 and 2	VM	VM		**Schlueter Comm. Co.,** S. F. **Fobes Supply Co.,** Portland, Seattle **Schlueter's,** 745 So. Figueroa St., Los Angeles	San Francisco
Apex Appliance Co. 3223 W. 30th St., Chicago, Ill.	"Apex"	511 526	26x54	44 48	E G Gn	3200	GE R&M Wx	1/6	G	FC	....	$160	$170	**A. M. Smith Co.,** 219 W. 3rd St., Los Angeles	**A. M. Smith Co.,** 219 W. 3rd St., Los Angeles	Los Angeles
Apex Elect. Distribg. Co. 1067 E. 152nd St., Cleveland, Ohio	"Rotarex"	325	22x60	46	E G	3000	Own	1/6	B	FC	1		$152.50 (Cash) $167.50 (Time)	**G. A. Buckley** 1405 Walnut St., Kansas City, Mo.	**Apex Elect. Distrib. Co.** 681 Market St., San Francisco 1437 Welton St., Denver 2011 Broadway, Oakland 1024–11th St., Sacramento 2117 Inyo St., Fresno **Illinois Elec. Co.** Los Angeles **North Coast Elec. Co.** Portland and Seattle **Electrical Equip. Co.** Butte, Montana **Intermountain Elec. Co.** Salt Lake City	Western Distributors
Barnett Foundry & Machine Co. Irvington, N. J.	"Capitol"	470	60x24	46	E G Gn	2700	.....	1/6	B	FC	....	$155	$170	.....	.....	Factory
Coffield Washer Co., The Dayton, Ohio	Grand Electric Home Ironer						GE	1/10				$121.50	$126.50	None	**Poole Electric,** Seattle **A. A. Wilson,** Los Angeles **Electric Maid Shop,** Portland **Weiss Washer Co.,** Spokane **Capital Electric,** Salt Lake City **Butte Electric Sup.,** Butte, Mont.	
Deming Mfg. Co., 5103 Lakeside Ave., Cleveland, Ohio	"Deming" "Automatic"	420	63x33	46	E G	3000	Ohio	1/4	G	FC	....	$185 $165	$210 $185	.....	**General Appliance Co.,** 1340 E. 6th St., Los Angeles	Los Angeles & San Francisco Offices
Holland Maid Co. Holland, Mich.	"Holland Maid"	280	57x24	48	E G	....	GE	1/6	G	FC HC	....	$165	$175	.....	.....	Factory
Horton Mfg. Co. Fort Wayne, Ind.	"Horton"	320	22x42	30	E G	2000	GE	1/6	B	FC	....	$140	.....	.....	**A. A. Wilson** Los Angeles **Salt Lake Hdwe Co.** Salt Lake City **Hexter & Co.** Portland **Schwabacher Hdwe Co.** Seattle **Holley-Mason Hdwe Co.** Spokane	Factory
Hurley Machine Co., Chicago, Ill.	"Thor No. 75" "Thor No. 30"	468 285	54x25 22x26	44 or 50 31	E G Gn E G	1500 1000		1/6 G	G A	A A	2 A	$165 $160	$180 $167	**Hurley Machine Co.,** 425 Rialto Bldg., San Francisco **J. W. Ferry**	**Pacific States Elec. Co.,** San Francisco, Oakland, Seattle, Portland and Los Angeles Long Beach, San Diego, Phoenix	Western Distributors
The "1900" Washer Co. Binghamton, N. Y.	"1900"	450	27x53	44	G E Gn	2500	R&M	1/10	G	FC	....	$160	$175	.....	.....	San Francisco
Sperlich & Uhlig Co., Detroit, Mich.	"Ironrite" "Ironrite Du Fold"	410 180	26x63 16x18	46 24	E G E	3500 1150	Dom Dom	1/4 1/12	G G	FC FC	1 1	$225 $145	$235 $165	**The L. C. Warner Co.,** 301 Occidental Ave., Seattle, Wash. **The Easy Housekeeping Shop,** Los Angeles, Cal.	.....	.....
Rainbow Appl. Mfg. Co. Rochester, N. Y.	"Rainbow"	300 365	37x19 53x20	30 46	GE GE	....	GE GE	1/6 1/6	G G	A A	1 1	$150 to $220	.....	.....	.....	Factory
Utensils Co. East Pontiac Extended Fort Wayne, Ind.	"Utenco"	340	20x42	24	E G Gn	1000	GE	1/6	B	FC HC A	....	.....	$165 $165 $175	.....	**Listenwalter & Gough** Los Angeles	Los Angeles
Western Electric Co. New York City	"Western Electric"	230	37½x 24	28	G	....	WE	1/10	G	FC HC	....	$95	$110	**Western Electric Co.** 680 Folsom St., San Francisco	**Western Elec. Co.** San Francisco, Los Angeles, Oakland, Portland, Seattle, Tacoma, Spokane, Denver, and Salt Lake City	All Branch Offices

ELECTRIC RANGE DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1925.

A list of Electric Range Manufacturers giving catalog information on the equipment of each with list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way mention the **Journal of Electricity.**

Name of Manufacturer	Trade Name	Model or Catalog No.	Type of Unit O—Open C—Enclosed	Floor Area	Height from Floor	Oven Dimensions	HEATING UNITS — Dimensions — Surface: Large	Medium	Medium	Small	Simmerer	Oven	Broiler	HEATING UNITS — Wattage — Surface: Large	Medium	Medium	Small	Total Watts Surface Units	Oven	Broiler	Maximum Wattage	Temperature Control A—Thermostat C—Clock	Oven E—Elevated C—Cabinet L—Low	Retail Price	Western Sales Representative	Western Distributors	Nearest Point at Which Repair Parts May be Secured
Edison Elec. Appliance Co., Chicago, Ill.	"Hotpoint Hughes"	RS- 67	O	28½x52½	57	18x18x14	8¾	6½	6½	6½	...	2-12x12	....	1500	1000	....	1000	4500	2-1500	....	7500	AC	C	$235.50	**Edison Elec. Appl. Co.,** Ontario, Cal. Los Angeles, Equitable Bldg., First and Spring Sts. San Francisco, 155 New Montgomery St. Seattle, 1526 Eighth Ave Portland, 10 North Broadway Salt Lake City, 60 East First, St., South		All sales offices
		R- 67																					223.50			
		R- 79	O	28½x62¼	70	18x18x14	"	"	...	"	...	4-12x12	....	"	"	....	....	6500	4-1500	....	12500	....	C	210.00			
		R- 75	O	28½x52½	64	"	"	"	...	"	...	12x12	12x12	"	"	....	1000	4500	2-1500	1500	9000	....	C	325.00			
		R- 63	O	"	41	"	"	"	...	"	...	"	"	"	"	....	....	3500	1500	"	6500	....	....	247.00			
		R- 85	O	28½x28¼	33	"	"	"	...	"	...	"	"	"	"	....	....	3500	"	"	6500	....	L	174.00			
		R- 87	O	"	"	"	"	"	...	"	...	"	"	"	"	....	1000	4500	"	"	7500	....	L	161.50			
		R-101	O	25 x44	41	16x12x18	6½	"	...	"	...	"	"	1000	"	....	....	3000	1200	1200	5400	....	C	175.00			
		R-105	O	21½x24	33	16x12x15	"	"	...	"	...	9x12	9x12	"	"	....	....	2000	1100	1100	4200	....	L	99.00			
		R-109	O	21½x37½	"	"	"	"	...	"	...	"	"	"	"	....	....	3000	"	"	5200	....	L	76.75			
		R- 67	C	28½x52½	57	18x18x14	8¾	6½	6½	6½	...	2-12x12	....	1500	1000	....	1000	4500	2-1500	....	7500	AC	C	84.25			
		RA- 67	"	"	"	"	"	"	"	"	...	"	....	"	"	....	....	"	"	....	"	....	"	210.00			
		RS- 67	"	"	"	"	"	"	"	"	...	"	....	"	"	....	....	"	"	....	"	....	"	223.50			
		R- 79	"	28½x62½	70	"	"	"	"	"	...	4-12x12	....	"	"	....	....	6500	4-1500	....	12500	....	"	235.50			
		R- 75	"	28½x52½	64	"	"	"	"	"	...	12x12	12x12	"	"	....	....	4500	2-1500	1500	9000	....	"	325.00			
		R- 63	"	"	41	"	"	"	"	"	...	"	"	"	"	....	....	3500	1500	"	6500	....	"	247.00			
		RA- 63	"	"	"	"	"	"	"	"	...	"	"	"	"	....	....	"	"	"	"	....	"	184.00			
		RS- 63	"	"	"	"	"	"	"	"	...	"	"	"	"	....	....	"	"	"	"	....	"	197.85			
		R- 87	"	28½x28¼	33	"	"	"	"	"	...	"	"	"	"	....	....	"	"	"	7500	....	L	212.50			
		R-101	"	25 x44	41	16x12x18	6½	"	"	"	...	"	"	"	"	....	"	3000	1200	1200	5400	....	C	175.00			
		RA-101	"	"	"	"	"	"	"	"	...	"	"	"	"	....	"	"	"	"	"	....	C	99.00			
		R-105	"	21½x24	33	"	"	"	"	"	...	9x12	9x12	"	"	....	"	2000	1100	1100	4200	....	L	125.00			
		R-109	"	21½x37½	33	"	"	"	"	"	...	"	"	"	"	....	"	3000	"	"	5200	....	L	83.00			
																								93.25			
Electrahot Appliances, Incl., 301 Fifth Ave., South Minneapolis, Minn.	"Electrahot"	B- 57	O	25 x43½	30	15x15x19	7⅓	7⅓	...	...	...	10x15	10x15	1500	1000	....	....	4500	1500	1500	7500	....	C	$135.00	**R. M. Burton** Alaska Bldg., Seattle		Seattle and San Francisco
Estate Stove Co., The Hamilton, Ohio	"Estate"	184	C	56½x26	58	18x18x12	8½	....	...	7	...	16⅞x17¾ 4-6	16⅞x17¾	1250	....	....	800	3650	3300	1500	9650	....	E	.....	**The Estate Stove Co.,** 180 New Montgomery St San Francisco		Factory
		E-184	"	56½x26	58	18x18x12	8½	....	...	7	...	16⅞x17¾ 4-6	"	1250	....	....	800	3650	"	"	"	....	E	.....			
		188	"	56½x25	50	18x18x12	"	....	...	"	...	16⅞x17¾ 4-6	"	1250	....	....	800	3650	3300	1500	7800	....	E	.....			
		76	"	40 x23	46¼	16x17x12	"	....	...	"	...	15⅞x16½ 3-12	"	1250	....	....	800	2850	3000	1300	6500	....	E	.....			
		181	"	53 x26	55	18x18x12	"	....	...	"	...	16⅞x17¾ 4-6	"	1250	....	....	800	3650	3300	1500	7800	....	L	.....			
		E-181	"	53 x26	55	18x18x12	"	....	...	"	...	16⅞x17¾ 4-6	"	1250	....	....	800	3650	3300	1500	7800	....	L	.....			
		179	"	66 x28	53	18x18x12	"	....	...	"	...	16⅞x17¾ 4-6	"	1250	....	....	800	3650	3300	1500	7800	....	L	.....			
		H-283	"	29 x16	54	18x12x12	"	....	...	"	...	11⅞x17¾ 2-6	"	1250	....	....	800	2850	2400	1000	5900	....	L	.....			
		180	"	40 x26	55	18x18x12	"	....	...	"	...	16⅞x17¾ 4-6	"	1250	....	....	800	3650	3300	1500	7800	....	L	.....			
		E-180	"	40 x26	55	18x18x12	"	....	...	"	...	16⅞x17¾ 4-6	"	1250	....	....	800	3650	"	"	"	....	L	.....			
		H- 78	"	28¾x18	43	12x11x17	8	....	...	6½	...	11⅞x10¾ 1-8	"	1100	....	....	650	1750	1750	775	4250	....	E	.....			
Landers, Frary & Clark, New Britain, Conn.	"Universal"	E- 91	C	27 x43½	52	14x14x19	8¾	....	...	....	...	.....	.....	1500	1000	....	....	4500	2000	1500	8000	....	E	$200.00	**Landers, Frary & Clark,** 335 New Call Bldg., San Francisco 1614 8th Ave., Seattle, Wash.	**Electric Appliance Co.,** San Francisco **The Elec. Corporation,** Los Angeles, Seattle and Portland **Marshall-Wells,** Portland, Ore.	Universal Service Stations San Francisco Los Angeles Seattle
		E- 92	"	"	58	"	"	....	...	....	...	.....	.....	"	"	....	....	"	"	"	"	....	"	215.00			
		E- 95	"	"	40	"	"	....	...	6¾	...	"	"	"	"	....	660	4160	"	"	7660	....	"	175.00			
		E- 96	"	"	51	"	"	....	...	"	...	.....	.....	"	"	....	"	"	"	"	8210	....	"	190.00			
		E- 93	"	"	40	"	"	....	...	....	...	.....	.....	"	"	....	....	3500	"	"	7000	....	"	165.00			
		E- 94	"	"	51	"	"	....	...	....	...	.....	.....	"	"	....	"	3500	"	"	7500	....	"	180.00			
		E- 90	"	27 x29	61	"	"	....	...	6½	...	.....	.....	"	"	....	"	4160	"	"	7660	....	"	150.00			
		E- 98	"	27 x23¾	38	"	"	....	...	"	...	.....	.....	"	"	....	"	3160	"	"	6660	....	L	150.00			
		E- 99	"	"	"	"	"	....	...	....	...	.....	.....	"	"	....	....	2500	"	"	6000	....	L	140.00			
A. J. Lindemann & Hoverson Co., Milwaukee, Wis.	L & H Electrics Both Full and Semi-Porcelain Enamel	830	O	49 x26½	56	18x14x18	8	7⅓	...	6	...	13½x11	13¼x 11	1750	1250	....	800	3800	3000	1800	8600	....	C	$220.00	**P. F. Ross** **Harry W. Lippert** 715 Bryant St., San Francisco	**Alexander & Lavenson,** 926 Howard St., San Francisco **No. Coast Electric Co.,** Seattle, Tacoma, Wash., Portland, Ore. **Barker Bros.,** Los Angeles, Cal.	Manufacturers Warehouse, San Francisco Los Angeles Warehouse Co., Los Angeles, Cal. No. Coast Elec. Co., Seattle, Tacoma, Wash. Portland, Ore.
		831	"	"	"	"	"	"	"	"	...	"	"	"	"	"	"	"	"	"	"	A	"	250.00			
		832	"	"	"	"	"	"	"	"	...	"	"	"	"	"	"	"	"	"	"	AC	"	270.00			
		810	"	49 x26½	42	18x14x18	"	"	...	"	...	13½x11	....	"	"	"	"	"	3300	....	7100	....	C	180.00			
		811	"	"	"	"	"	"	...	"	...	"	....	"	"	"	"	"	"	....	"	A	"	210.00			
		812	"	"	"	"	"	"	...	"	...	"	....	"	"	"	"	"	"	....	"	AC	"	230.00			
		801	"	33 x18	56½	14x18x 12½	8	7⅓	...	6	...	7½x13	....	1750	1250	....	800	3800	2500	....	6300	....	L	150.00			
		840	O-C	55 x27½	33½	16x14 x18	8	8	8	6	...	7x13	....	1750	1750	1250	800	5550	2-1500	....	8000	....	C	250.00			
		841	"	"	"	"	"	"	"	"	...	"	....	"	"	"	"	"	"	....	"	A	"	280.00			
		842	"	"	"	"	"	"	"	"	...	"	....	"	"	"	"	"	"	....	"	AC	"	300.00			
		807	"	42x21	33	16x14x18	8	7	7	....	...	"	....	1750	1500	1250	....	4500	"	....	7200	....	C	120.00			
		808	"	"	"	"	"	....	....	....	...	"	....	....	....	....	....	....	"	....	....	A	"	150.00			
		809	"	"	"	"	"	....	....	....	...	"	....	....	....	....	....	....	"	....	....	AC	"	170.00			
		823	"	31x19	34	16x14x 12½	7	7	7	....	...	7x10½	....	1000	1000	1250	....	3250	"	....	6250	....	L	85.00			
		820	"	"	"	"	7	7	....	....	...	"	....	1000	1250	....	....	2250	"	....	5250	....	"	80.00			

ELECTRIC RANGE DIRECTORY, Continued.

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ELECTRIC REFRIGERATOR COMPRESSOR DIRECTORY

Published and Copyrighted by Journal of Electricity, October 15, 1925

A list of domestic electric refrigerator compressors giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of our knowledge it is correct at date of publication. When referring to this list in any way, mention the **Journal of Electricity.**

Therm—Thermostat
Merc Therm—Mercury Thermostat
Press Therm—Pressure Thermostat

Recip—Reciprocating
Wx—Westinghouse
GE—General Electric
Cent—Century

Wag—Wagner
Em—Emerson
Delco—Delco Light Co.
No. W—North Western

Lld—Leland
DFM—Dayton Fan & Motor Co.
WE—Western Electric

Name of Manufacturer	Trade Name	Model or Catalog No.	Control	Refrigerant	Compressor		Motor		Drive	Dimensions (Inches)	Weight	Maximum Capacities		Retail Prices Maximum and Minimum West of Rockies*	Western Sales Representative	Western Distributors	Nearest Point at which Repair Parts may be Secured
					Type	Cooling	H.P.	Maker				Food cu. ft.	Ice Lbs.				
Audriffren Refrigerating Machine Co. 90 West St. New York	Audriffren Electric Refrigerator	.....	Therm	Sulphur-Dioxide	Double Acting Piston	Air	1/3	Wx or Cent.	Belt	.....	....	16	24	$900 F.O.B. Jersey City, N.J.	.....	.....	Factory
Copeland Products, Inc. Detroit, Mich.	Copeland Refrigerating Systems	6-10-15-20 30-40	Therm	Iso-Butane (Freezol)	Recip	Air	1/6—1/4	DFM	V-belt	15 x26 x23½	216	40	15to20	$250 to $260 plus installation	**S. L. Denning,** Dist Sales Mgr. 77 O'Farrell St., San Francisco	Arrangements being made	Will be Los Angeles, San Francisco, Portland, Seattle, Spokane
Delco Light Co. Dayton, Ohio	Frigidaire	1 cyl. 2 cyl.	.....	Sulphur-Dioxide " "	.....	.....	1/4 " "	Cent Wag Em Delco	Belt " Gear	18x23½x19 16½x36 x22 21 x30 x18	200 251 325	10 35 35	4½ 11½ 11½	$190 plus frt. and installation $260 to $320 plus freight and installation $285 to $340 plus freight and installation	**J. A. Harlan,** Sales Mgr. Dayton, Ohio	**Delco Light Co.,** 1525 16th St. Denver **Delco Light Co.,** 817 Mission St., San Francisco **Delco Light Co.,** 1518 W. 7th St. Los Angeles **Modern Appliance Co.** 1612 2nd Ave., Seattle **Indep. Lt. & Power Co.,** 134 E. 2nd St., Salt Lake	Distributors or dealers
Electrice Corporation 120 Broadway, N. Y.	Electrice	.....	Merc Therm	.....	Rotary	Air	1/4	Em Wag	Direct	.....	50*	7	6	$240 to $275 plus freight	Dealers Appointed all over	None	Local dealer
Electro-Kold Corporation Spokane, Wash.	Electro-Kold	A-B-C-D-E	Press Therm	Sulphur-Dioxide	1 cyl. Recip	Air	1/4-1/3-1/2	Cent	Belt	21 x17 x32	140	60	15	$265 to $400	Dealers Appointed in West	.....	At all dealers
General Electric Company Schenectady, N.Y.	GE Refrigerator	OC-2 Form 1	Therm	Sulphur-Dioxide	.....	Air	1/4	GE	Direct	.....	....	9 and 15	.....	$600 to $725	.....	.....	.....
General Refrigeration Company Beloit, Wis.	Lipman-General	25-F	Therm	Ammonia	Recip	Water	1/4	Cent	Belt	24½x17½x23½	450	80	6	$450 average	**C. Sowers**	**Gray, McLean & Percy,** Seattle, Portland **Price, Teltz Co.,** San Francisco **General Ref. Co. of Calif.,** Los Angeles **West Coast Gas Eng. Co.,** San Diego	.....
The Isko Company 2525 Clybourn Ave. Chicago, Ill.	Isko	20 20 twin 200	Therm " "	Sulphur-Dioxide " "	Recip " "	Water " "	1/3 2-1/3 3	Cent Em Wag GE No W	Direct " "	36 x 9 x16 36 x16 x18 60 x24 x18	240 480 1250	60 100 1400	5 to 10 12 to 20 1200	$325 to $495 $595 to $800 $895 to $1495	**Howard S. Fassett**	**Northey Mfg. Co.,** Waterloo, Iowa **Mid-Western Appl. Co.,** Omaha, Neb.	.....
Kelvinator Corporation 2072 W. Fort St., Detroit, Mich.	Kelvinator Electric Refrigeration	Sr Jr	Therm "	Sulphur Doixide "	Recip "	Air "	1/4 "	Wag Cent Em Lld	Belt "	30½x17 x26½ 30½x17 x24½	160 140	70 20	8½ 7½	.....	**L. D. Robertson** 1522 W. 7th St. Los Angeles	Any authorized dealer or distributor	
Refrigo Corporation 18th & Forest Aves., Milwaukee, Wis.	Refrigo	.....	Merc Therm	Ammonia	Recip	Water	1/4	Cent WE	Belt	18 x24 x22	185	90	5	.....	.....	.....	.....
Servel Corporation 510 N. Dearborn St., Chicago	Serv-el	No. 1 8 51	Press Therm " "	Methyl Chloride " "	Recip " "	Air " Water	1/4 " "	Cent " "	Belt " Gear	30 x17 x17 30 x17 x17 21 x37 x39	300 " 575	40 85 600	27 40 660 to 1000	.....	**R. J. Cash, Jr.** **Guy Cooper,** Pac. Coast Rep. 6501 Sunset Blvd., Los Angeles, Calif.	**Heesman Pollard Company,** Oakland, Los Angeles **Power Plant Engineering Co.,** Seattle, Tacoma, Portland **Utah Power Co.,** Salt Lake **Idaho Power Co.,** Boise **Central Ariz. Power Co.,** Phoenix	Any distributor
Superior Refrigeration, Inc. Lima, Ohio	Superior	A-B-C-D	Merc Therm	Sulphur-Dioxide	Recip	"A"–Water "B"–Water "C"–Air	1/4	Cent	Belt	23½x17 x16	....	.....	54	$300 to $490	.....	.....	Chicago
Universe Corporation 77 W. Washington St., Chicago, Ill.	Polaris	Kitchinette Apt. Spec. Ideal Peerless	Therm	Sulphur-Dioxide	Recip	Air	1/4	DFM	Belt	19 x24 x17½	300	12	.....	$350 F.O.B. factory " $400 F.O.B. factory $475 F.O.B. factory	.....	.....	.....
Valley Elect. Refrig. Works Buffalo, N. Y.	Valley Electric Refrigeration	Compressor "A" "B" "C" "D"	Press Therm	Sulphur-Dioxide	Recip	Water	1/6 to 1/3	Cent	Chain	31 x24	260	150	500	$295 to $585	**W. S. Ray Mfg. Co.** 118 New Montgomery St., San Francisco, Calif.	**W. S. Ray Mfg. Co.** San Francisco	San Francisco Buffalo, N. Y.

ELECTRIC RADIATOR AND HEATER DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1925.

A list of Electric Radiator and Heater Manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way, mention the **Journal of Electricity.**

Key to Abbreviations

B—Bronze
Br—Brass
C—Copper
G—Gold
Nk—Nickel
BS—Blue Steel
OI—Old Ivory
En—Enamel
Po—Portable
Pd—Pendant
St—Stationary
Fr—Fireplace
VM—Various Models

Name of Manufacturer	Trade Name	Dimensions in Inches	Reflector Dimen. (Inches)	Finish		Heating Element					Price		Western Sales Representatives	Western Distributors	Nearest Point at Which Repair Parts Can Be Secured.
				Heater	Reflector	Type	Number of Elements	Total Wattage	No. of Heats	Removable Elements	Fits Edison Socket	East	West of Rockies			
Edison Elec. Appliance Co., Ontario, California.	"Hedlite"	20x15	14	B OI En	C	Po	1	630	1	Yes	Yes	.....	$6.50 to $16.50	**Edison Elec. Appl. Co., Inc.,** Sales Offices & Service Sta.: Ontario, Calif., San Francisco, Los Angeles, Portland, Seattle, Salt Lake City	All Leading Jobbers.	All Sales Offices and Service Stations
	(High Wattage)	VM	VM	En		Po	....	1000 to 5000	1 to 3	....	No	.....	$26.00 to $56.00			
Elec. Heatg. & Mfg. Co., 6th No. & Harrison Sts., Seattle, Wash.	"100% Radiators"	.....	....	En	....	Po	3 to 6	1200 to 8000	3 to 6	No	No	.....	$22.50 to $85.00	**Elec. Htg. & Mfg. Co.,** Seattle	**Eastern Mfrs. Co.,** Portland **Wholesale Electric Co.,** San Francisco **Cumberland Light & Power Co.,** Cumberland, B. C., Canada **R. Wolfsberg, Inc.,** 1851 Industrial St., L. A. All Leading Jobbers	Seattle
	"Heet-feet Registers"	19x32	16x 30	B	....	St	1	660 to 4000	3	Yes	No	$30.00 to $60.00	$25.00 to $50.00			
		19x16	16x 14	Nk		St	1	660 to 4000	3	Yes	No					
Estate Stove Co., The Hamilton, Ohio	"Estate"	17x 8	9½	B	B	Po	1	660	1	Yes	No	$7.50	$8.00	**The Estate Stove Co.,** Furn. Exchge. Bldg., S. F.	**The Estate Stove Co.,** San Francisco	Factory
Even Heat Elec. Co., 2429 Canton Ave., Detroit, Mich.	"Even Heat"	17x9	....	En	N	Po	2	660	1	Yes	....	$9.50	.....	**H. J. Gute & Co.,** 150 Post St., San Francisco	**H. J. Gute & Co.,** San Francisco **Tacoma Mercantile Co.,** Tacoma **North West Sales Co.,** St. Paul, Minn.	St. Paul, Minn.
Fitzgerald Mfg. Co., The Winsted, Conn.	"Model C"	18x14	14	En	C	Po	1	600	1	Yes	Yes	.....	.....	**A. S. Chernoff Co.,** 41 Fell St., San Francisco		San Francisco
	"Model D"	17x12	12	En	C	Po	1	600	1	Yes	Yes	.....	.....			
A. C. Gilbert Co., The New Haven, Conn.	"Polar Cub"	13x11	11	En	C	Po	1	550	1	Yes	Yes	$5.00	$5.25	**H. E. Iblings,** 4816 Franklin Ave., Los Angeles	In all large cities.	Distributors
Haber Elec. Appliance Co., Chicago, Ill.	"The Sun"	19x14	14	En	C	Po	1	575	1	Yes	Yes	$7.00	$7.35	**Detsch & Co.,** San Francisco Portland, Denver, Los Angeles		Sales Representatives
W. Wesley Hicks, Rialto Bldg., San Francisco **M. L. Hooper,** 4536 Hollywood Blvd., Los Angeles **H. V. Mooney,** 85½ 5th St., Portland, Ore. **Gulf Elec. Appliance Co.,** Tampa, Fla.	"Wesix" "Radiant-Convection"	VM	....	....	....	Po St Fr	VM	800 to 6000	3	....	....	$25.00 to $150.00	.....	**W. Wesley Hicks,** Mfgr. and Patentee, Rialto Bldg., San Francisco **Sandoval Sales Co.,** Los Angeles and San Francisco **H. V. Mooney,** Portland, Ore.	All Jobbers	San Francisco Los Angeles Portland
Landers, Frary & Clark, New Britain, Conn.	"Universal" and "Thermax"	14x10 and 18x14	10 and 14	B	C	Po	1	625	1	Yes	Yes	$5.50 to $11.50	$5.50 to $11.50	**Landers, Frary & Clark** 335 New Call Bldg., San Francisco	**Electric Appliance Co.,** San Francisco **The Electric Corp.,** Los Angeles, Seattle, Portland	Service Stations, San Francisco, Los Angeles, Seattle
Majestic Elec. Appl. Co., Inc., 590 Folsom St., San Francisco	"Majestic" "Radiant"	16x12	11½	En	C	Po	1	615	1	Yes	No	$7.50	$7.50	**Majestic Elec. Appl. Co.,** Factory & Main Office 590 Folsom St., San Francisco	All Leading Jobbers	San Francisco
		19x14	12½	En	C	Po	1	615	1	.....	.....	$9.50	$9.50			
		15x15	...	Nk	C	Po	2	760	1	Yes	No	$25.00	$25.00			
		19x14	12½	En	C	Po	2	960	1	.....	.....	$12.00	$12.00			
	"Radiant-Convection"	17x22	....	B	....	St	....	2000	3	No	No	$40.00 to $115.00	$40.00 to $115.00			
		20x28	....	Br	....	Fr	....	.....	.....	.....	.....					
		9x35	....	C	....	St	....	4000	.....	.....	.....					
The Magnavox Company, Oakland, Calif.	"Magnaray" Radiant H1, H-2N, H-3S			En	Br	Po	1	500	1	Yes	No	.....	$10.00	**The Magnavox Company,** Oakland, Calif.	**Alexander-Lavenson Co.** **Dunham, Carrigan, Hayden** San Francisco **Listenwalter & Gaugh,** Los Angeles **Fobes Supply Co.,** Seattle **Stubbs Elect. Co.,** Portland **Builders Service and Supply Co.,** Oakland	
				En	Br	Po	2	660	1	Yes	No	.....	$19.00			
				En	Br	Po	3	990	3	Yes	No	.....	$25.00			
	H-1-W			En	Br	St	1	500	1	Yes	No	.....	$20.00			
	H-2-W			En	Br	St	1	1000	2	Yes	No	.....	$30.00			
	Radiant Air HF-3			B	G	Fr	5	2000	3	Yes	No	.....	$65.00			
	HF-4			B	G	Fr	6	2650	3	Yes	No	.....	$75.00			
	Air Circulation HC, HC-1 HC-V, HC-1-V			En	G	Po	2 to 6	1670 to 5000	3	Yes	No	.....	$27.00 to $67.00			
L. Plaut & Co. 432-E. 23rd St., New York City	"Double Ray"	7x8	8½	Br	C	Po	....	600	1	Yes	Yes	$8.50	$8.50	**Ralph A. Ryan** 417 Montgomery St., San Francisco	**Reiman Whsle. Elec. Co.** Los Angeles	New York City
Prometheus Elec. Co. 360 W. 13th St., New York City	"Prometheus"	18x3	....	B	....	Po	5 10	1000 2000	3 3	Yes Yes	No No	$40.00 $50.00	$40.00 $50.00	**M. E. Hammond,** Pacific Bldg., San Francisco		New York City
Russell Electric Co., 340 W. Huron St., Chicago, Ill.	"Hold Heet"	15½x 12	12½	En	C	Po	1	660	1	Yes	Yes	$7.50	$7.50	**W. H. Carter,** 1245 Broadway, San Francisco	**North Coast Elec. Co.,** Seattle, Tacoma, Portland Spokane **B. & R. Supply Co.,** Denver **Listenwalter & Gough,** Los Angeles and San Francisco **Salt Lake Hdwe. Co.,** Salt Lake City	Jobbers Stock
Rutenber Elec. Co., Marion, Ind.	"Marion"	18x13	11½	En	C	Po	1	615	1	Yes	No	$10.00	$10.00	**A. E. Carroll,** 55 New Montgomery St., San Francisco		San Francisco
Scheeline Mfg. Co., 76 Tehama St., San Francisco	"Hulbert"	VM	....	....	....	VM	VM	660 to 6600	....	....	....	.....	$35 to $250	**Scheeline Mfg. Co.,** San Francisco		San Francisco
Simplex Elec. Heatg. Co., 85 Sidney St., Cambridge, Mass.	"Sunbowl"	20x14	14	En	C	Po	1	600	1	Yes	Yes	$8.50	$8.50	**P. B. Miller,** 137 5th St., San Francisco	**Universal Elec. Co.,** S. F. **Reiman Whsle. Elec. Co.,** L. A. **Marshall-Wells Hardware Co.,** Portland, Ore. **Whiton Hardware Co.,** Seattle	Distributors
	"Sunbowl Jr."	11x 12½	10	En	C	Po	1	600	1	Yes	Yes	$5.00	$5.00			

ELECTRIC RADIATOR AND HEATER DIRECTORY
(CONTINUED)

Key to Abbreviations
B—Bronze
Br—Brass
C—Copper
Nk—Nickel
BS—Blue Steel
Of—Old Ivory
En—Enamel
Po—Portable
Pd—Pendant
St.—Stationary
Fr—Fireplace
VM—Various Models

Name of Manufacturer	Trade Name	Dimensions in Inches	Reflector Dimen. (Inches)	Finish: Heater	Finish: Reflector	Type	Heating Element: Number of Elements	Heating Element: Total Wattage	Heating Element: No. of Heats	Heating Element: Removable Elements	Heating Element: Fits Edison Socket	Price: East	Price: West of Rockies	Western Sales Representatives	Western Distributors	Nearest Point at Which Repair Parts Can Be Secured.
Sparling Elec. Prod. Co. 2 Letchworth St., Buffalo, N. Y.	"Hot Glow"	20x20 30x30	....	....	C	Fr	3	1400	3	....	No	.....	.....	**Regan & Koehler,** 240 Rialto Bldg., San Francisco		
Strait & Richards, Inc. Fabyan Place, Newark, N. J.	"Glolog"	16 20 24 30	....	Oak Logs	....	Fr	2	2000 2000 2000 3000	2	Yes	....	$30.00 35.00 40.00 50.00	$35.00 40.00 45.00 55.00	**Atlantic & Pacific Agencies Corp.,** Rialto Bldg., San Francisco	**Atlantic & Pacific Agencies Corp.,** San Francisco **Globe Elec. Sup. Co.,** 1843 Wazee St., Denver, Colo.	San Francisco
Utica Products, Inc., Utica, New York	"The Utica"	10½x 17	....	En	....	Po	1	600	1	Yes	Yes	$10.00	.....	.....	.....	Jobbers & Dealers
Westinghouse Elec. & Mfg. Co. 1st Natl. Bank Bldg., San Francisco	"Cozy Glow"	18x14	14	B	B	Po	1	660	1	Yes	No	$ 8.50	$ 8.50	**Fobes Supply Co.,** San Francisco Portland, Seattle, Oakland **Illinois Elec. Co.,** Los Angeles	**Westinghouse Agent Jobbers**	Jobbers & Dealers
	"Cozy Glow"	18x14	B	En	B	Po	1	660	1	Yes	Yes	9.50	9.50			
	"Cozy Glow Jr."	14x11	11	B	B	Po	1	660	1	Yes	No	6.50	6.50			
	"Solar Glow"	20x 19½	....	B	....	Fr Po	1	2000	3	Yes	No	37.50	37.50			
		16x12	....	En	....	St	1	1200	1	Yes	No	25.00	25.00			
	"D" Air Heaters	12x 13½	....	En	....	Po	1	1000	3	Yes	No	18.00	18.00			
		20x 13½	....	En	....	Po	2	2000	3	Yes	No	24.00	24.00			
		27x 13½	....	En	....	Po	3	3000	3	Yes	No	30.00	30.00			
Frank E. Wolcott Mfg. Co.	"Torrid"			En	C			660		Yes			$4.50	**H. J. Gute,** 150 Post St., San Francisco		

VACUUM CLEANER DIRECTORY
Published and Copyrighted by the Journal of Electricity, October 15, 1925.

A list of vacuum cleaner manufacturers giving catalog information on the equipment of each, with complete list of Western distributing agencies, as well as points where repair parts may be secured. The publisher does not guarantee this information, but to the best of our knowledge and belief it is correct at date of publication. When referring to this list in any way, mention the Journal of Electricity.

Key to Abbreviations
SW—sweeper type
TR—truck type
ST—stationary type
Sh—switch on handle
Sc—switch on cord
Sm—switch on motor
Sf—switch on frame
R—rotating
Rg—gear driven
Rs—shaft drive
Rc—chain drive
Bm—belt to motor
Bw—belt to wheels
S—stationary
V—vertical mounted
H—horizontal mounted
GE—General Elec. Co.
Dom—Domestic Elec. Co.
R&M—Robbins & Myers
Wx—Westinghouse
Berco—Birtman Elec. Co.
†—eastern price plus freight
*—price includes attachments

Manufacturer	Trade Name	Weight (in lbs.)	Style	Brush	Motor: Make	Motor: H.P.	Motor: Mounted	Switch Control	Attachments	Retail Price: Attachments East	Retail Price: Attachments West	Retail Price: Cleaner East	Retail Price: Cleaner West	Western Sales Representative	Western Distributors	Nearest Point At Which Repair Parts May Be Secured.
Apex Electrical Mfg. Co., 1067 E. 152nd St., Cleveland, Ohio	"Apex"	10½	SW	ST	Own	1/12	H	Sh	7	$10.00	$11.00	$65.00	$69.50	**G. A. Buckley,** 1405 Walnut St., Kansas City, Mo.	**Fobes Supply Co.,** Seattle, Portland **Illinois Elec. Co.,** Los Angeles **Electl. Equipt. Co.,** Butte **Intermountain Elec. Co.,** Salt Lake City	Distributors
Birtman Electric Co., Lake & Desplaines Sts., Chicago, Ill.	"Magnetic Housecleaner"	12½	SW	S	Berco	1/6	H	Sh	6	.....	.....	$76.00	$76.00	**H. J. Gute,** Division Mgr., 150 Post St., San Francisco	**H. J. Conrad,** 317 No. Oxford St., Los Angeles **Birtman Elec. Co.,** 150 Post St., San Francisco **J. B. Howell,** Berkeley **C. M. Mackenzie,** 1507 Cabrillo, Torrance, Calif. **L. A. MacLean,** Oakland **Thos. P. Reid,** San Diego	San Francisco
	"The New Bee-Vac"	11	SW	S	Berco	1/6	H	Sh	5	$7.50	.....	$44.50	$44.50	**Birtman Electric Company** **H. J. Gute & Co.,** San Francisco **J. F. Kitchen,** Los Angeles	Through Leading Jobbers	San Francisco and Los Angeles
Clements Mfg. Co. 601 Fulton St., Chicago, Ill.	"Cadillac"	12	SW	S	Own	1/4	H	Sh	7	$10.00	$12.50	$55.00	$60.00	**F. E. Spencer,** 929 W. 8th St., Los Angeles	**F. E. Spencer,** 929 W. 8th St., Los Angeles **Ray Bentley,** 219 Worcester Bldg., Portland	From any distributor
The Super Service Co., 812 Lafayette St., Toledo, Ohio	"New Home"	12½	SW	..	Own	.....	H	Sh	8	.....	.....	.....	.....	**Shirey Sales Co.,** 2901 Piedmont Ave., Berkeley, Cal.		**The Super Service Co.,** Toledo Ohio 1015 Market St., San Francisco and 929 W. 8th St., Los Angeles
	"Super-Service"	..	SW	..	Own	1/3	H	Sm	7	.....	.....	.....	.....	.....	.....	
	"Super-School"	25	SW	..	Own	1/3	H	Sm	8	.....	.....	.....	.....			
	"Super-Theatre"															
	"Super-Church"															
Edison Elec. Appliance Co., 5600 Taylor St., Chicago, Ill.	"Hotpoint"	11	SW	S	GE	1/5	H	Sh	8	$10.00	†	$49.50	†	**P. H. Booth,** District Sales Mgr., Ontario, Calif. **B. E. Rowley,** District Sales Mgr., 60 East First South St., Salt Lake City		Ontario, Calif. 155 New Montgomery St., San Francisco 1526-8th Ave., Seattle 10 No. Broadway, Portland 60 East First South St., Salt Lake City

VACUUM CLEANER DIRECTORY
(CONTINUED)

Key to Abbreviations
SW—sweeper type
TR—truck type
ST—stationary type
Sh—switch on handle
Sc—switch on cord
Sm—switch on motor
Sf—switch on frame
R—rotating
Rg—gear driven
Rs—shaft drive
Rc—chain drive
Bm—belt to motor
Bw—belt to wheels
S—stationary
V—vertical mounted
H—horizontal mounted
GE—General Elec. Co.
Dom—Domestic Elec. Co.
R&M—Robbins & Myers
Wx—Westinghouse
Berco—Birtman Elec. Co.
†—eastern price plus freight
*—price includes attachments

Manufacturer	Trade Name	Weight (in lbs.)	Style	Brush	Motor: Make	Motor: H.P.	Motor: Mounted	Switch Control	Attachments	Retail Price: Attachments East	Retail Price: Attachments West	Retail Price: Cleaner East	Retail Price: Cleaner West	Western Sales Representative	Western Distributors	Nearest Point At Which Repair Parts May Be Secured.
Elec. Vacuum Cleaner Co., Ivanhoe Road, Cleveland, Ohio	"Premier Duplex"	13½	SW	Bm	GE type	1/8	H	Sh	7	$10.00	$11.00	$60.00	$65.00	**C. J. James,** 236 So. Los Angeles St., Los Angeles **C. A. Pearl,** 61 Fifth St., N. Portland **G. E. Tribble,** 575 Mission St., San Francisco	**Pacific States Electric Co.,** San Francisco, Los Angeles, Oakland, Portland, Seattle and Spokane Long Beach, San Diego, Cal., Phoenix, Ariz., **Capital Electric Co.,** Salt Lake City	**Pacific States Elec. Co.,** San Francisco, Los Angeles, Oakland, Portland, Seattle and Spokane, Long Beach, San Diego, Cal., Phoenix, Ariz. **Capital Electric Co.,** Salt Lake City
	"Cleveland"	13½	SW	S	GE type	1/8	H	Sh	8	$5.00	.....	$25.00	.....			
	"Liberty"	11½	SW	Bw	GE type	1/8	H	Sh	8	$10.00	$10.00	$50.00	$50.00			
	"Handy"	6½	...	...	GE type	1/8	H	Sc	6	.....	.....	$40.00	$42.50			
Eureka Vacuum Cleaner Co., Hamilton & Dewey Aves., Detroit, Mich.	"Eureka"	11	SW	S	Own	1/5	H	Sh	5	.....	.....	$45.00	$55.00	**Eureka Vacuum Cleaner Co.,** 128 Post St., San Francisco	**Factory Branches,** San Francisco and Los Angeles **Poole Electric Co.,** 1206 4th Ave., Seattle **Eureka Vacuum Cleaner Co.,** 162 S. Post St., Spokane	From Factory Branch or from any Distributor.
Federal Electric Co., 8700 So. State St., Chicago, Ill.	"Federal"	11	SW	Rc	Own	1/6	V	Sh	6	$8.00	$8.50	$55.00	$55.00	**Federal Electric Co.,** Landregan & Powell Sts., Oakland	Same	All Pacific Coast Jobbing Points
The P. A. Geier Co., 540 East 105th St., Cleveland, Ohio	"Super-Royal"	12	SW	S	Dom	.....	H	Sh	8	$10.00	$13.50	$62.50	$73.50	.....	**J. G. Creighton Co.,** 53-4th St., Portland **Listenwalter & Gough, Inc.,** 819 E. 1st St., Los Angeles 940 Mission St., San Francisco	From any distributor
Hamilton Beach Mfg. Co., 1501 Rapids Drive, Racine, Wis.	"Hamilton Beach"	15	SW	Bm R	Own	1/5	H	Sh	8	$8.50	$9.00	$62.50	$64.00	**Hamilton Beach Mfg. Co.,** Racine, Wis.	Sold direct to Dealers.	**H. L. Hudson,** 378 O'Farrell St., S. F. **Gans Bros.,** 141 S. Main St., Los Angeles
The Hoover Co., North Canton, Ohio	"Hoover" Model 103	16½	SW	Bm	Own	.08	V	Sm	7	$12.50	$13.50	$52.50	$60.00	**The Hoover Company,** Geary & Leavenworth Sts., San Francisco		"The nearest Hoover District Office"
	Model 541	15½	SW	Bm	Own	.09	V	Sm	7	$12.50	$13.50	$65.00	$74.00			
	Model 961	30½	SW	Bm	GE	.17	V	Sm	7	$15.00	$16.50	$150	$160			
Hurley Vacuum Cleaner Co., 18th Floor Steges Bldg., Chicago, Ill.	"Hurly-Thor"	15½	SW	Rs	....	1/7	V	Sh	8	$12.50	$12.50	$65.00	$70.00	**Hurley Machine Co.,** **J. W. Ferry,** 425 Rialto Bldg., San Francisco	**Thor Shops,** 154 5th St., Portland 213 Pine St., Seattle 124 Post St., San Francisco 306 W. 7th St., Los Angeles 1754 Broadway, Oakland	Thor Shops
Jewell Vacuum Cleaner Co., 226 N. Jefferson St., Chicago, Ill.	"Jewell"	11	SW	S	Own	1/5	H	Sh	4	$5.00	$5.00	$39.75	$39.75		**Grether & Grether, Inc.,** 722 So. Los Angeles St., Los Angeles **Hulse, Bradford Co.,** 844 Mission St., San Francisco **North Coast Elec. Co.,** Portland & Seattle	
The Kent Co., Inc., 583 W. Dominick St., Rome, N. Y.	"Kent Vacuna"	32, 48, & 72	TR & St	S	Wx	1/5 & up	V	Sf	10 & up	.....	.....	$130 & up	$130 & up	**F. A. Tanner,** 77 O'Farrell St., San Francisco **C. W. Jones,** 5987 Franklyn Ave., Hollywood, Calif. **A. H. Cox & Co.,** 307 1st Ave., S. Seattle, Wash.	.....	Rome, N. Y.
Landers Frary & Clark, New Britain, Conn.	"Universal"	12	SW	...	Dom GE WX	1/8	H	Sh	7	$10.00	$10.00	$49.50	$57.50	**Landers Frary & Clark,** 335 New Call Bldg., San Francisco	**Through Jobbers** **Universal Service Station**	San Francisco, Los Angeles, Seattle
M. S. Wright Co., 164 Fremont St., Worcester, Mass.	"Sweeper-Vac"	15	SW	R & Rg	Dom	1/5	H	Sh	7	$10.50	$11.00	$57.50	$65.00	**F. W. Biven,** 362 Jayne Ave., Oakland	**A. Schleuter & Co.,** Oakland **A. A. Wilson,** Los Angeles **Lance Sales Co.,** Portland **Domestic Appl.,** Spokane	
O. K. Machine Co., Fort Wayne, Ind.	"O. K. Vacuum Brush"	3	SW	Bm	R&M	.....	V	Sm	.	.....	.....	.....	$27.50	**United Vacuum Cleaner Stores**	**United Vacuum Cleaner Stores**	Fresno, Calif.
The Regina Corp., Rahway, N. J.	"Regina Electric Home Cleaning Machine"	12	SW	S	GE	1/9	..	Sh	8	.....	.....	$69.75 *	$69.75 *	**The Regina Corp.,** 589-13th St., Oakland, Calif. San Francisco, Los Angeles, Sacramento, San Diego	.....	Oakland, Los Angeles, San Bernardino
B. F. Sturtevant Co., Hyde Park, Boston, Mass.	"Sturtevant"	25 to 86	TR	S	.....	1/6 to 3	H	Sc	4 to 8	$33.00 & up	.....	$125 to $1122	.....	.....	**B. F. Sturtevant Co.,** San Francisco, Los Angeles, Portland, Seattle, Salt Lake City	
The Torrington Company, Torrington, Connecticut	"Torrington"	12½	SW	R	GE	1/5	H	Sh	9	.....	$13.00	.....	$65.00	**National Elect. Sweeper Co.,** 4124-30 Broadway, Oakland	.....	Oakland
Western Electric Co., New York City	"Western Electric No. 12"	15	SW	Bm	Dom	1/5	H	Sh	6	$11.50	$12.50	$57.50	$60 00	**Western Electric Co.**	**Western Electric Co.,** San Francisco, Los Angeles, Seattle, Portland, Denver, Salt Lake City	All offices
	"Western Electric No. 14"	12	SW	...	GE	1/5	H	Sh	6	$7.00	$8.00	$36.00	$38.00			
Wise-McClung Co., Ltd., New Philadelphia, Ohio	"Sunshine"	11½	SW	S	Wx	1/4	H	Sh	6	.....	.....	.....	.....	.....	**United Vacuum Cleaner Stores,** Main Office, Fresno, Calif. **Mine & Smelter Supply Co.,** Denver, Colo. and Salt Lake City **Chas. A. Eastman,** 84 6th St., Portland, Ore.	Fresno, Denver, Salt Lake City, Portland
Wise-McClung Co., Ltd., New Philadelphia, Ohio	"America"	11½	SW	Bw	Arrow	1/8	V	Sf	6	.....	.....	.....	$65.00		**Elec. Service Co.,** Portland, Seattle **Salt Lake Hdwe. Co.,** Salt Lake City	Portland, Seattle Salt Lake City
	"Columbia"	11½	SW	Bw	Arrow	1/5	V	Sh	6	.....	.....	.....	$70.00			

WASHING MACHINE DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1925

A list of washing machine manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of our knowledge it is correct at date of publication. When referring to this list in any way, mention the **Journal of Electricity.**

Key to Abbreviations

O—oscillating type
VC—vacuum cup type
Cl—cylinder type
D—dolly type
Im—impeller type
DFM—Dayton Fan & Motor Co.
Wx—Westinghouse
GE—General Electric
RM—Robbins & Myers
Em—Emerson
Dom—Domestic
Cen—Century
W—wood
M—metal
Sw—swinging
St—stationary
An—Anchor
Am—American
C—copper
TC—tinned copper
Cz—copper, zinc lined
GI—galvanized iron
Z—zinc
VM—various models
Al—Aluminum

Manufacturer	Trade Name	Operation	Motor		Wringer		Tub			Retail Price		Western Sales Representative	Western Distributor	Nearest Point At Which Repair Parts May Be Obtained.
			Horse Power	Maker	Type	Length in Inches	Dimensions	Capacity (Sheets)	Material	Eastern	West of Rockies			
Altorfer Bros. Co., Peoria, Ill.	"A. B. C."	Cl	1/4	Wx	M	12	22x24	6	GI	$160	.....	**C. H. Sundberg,** Los Angeles	**A. A. Wilson,** Los Angeles **Electric Service Co.,** Portland	Distributors.
		Cl	1/4	Wx	M	12	22x24	6	W	145				
		O	1/6	Wx	M	12	22x18	6	C	125				
		O	1/6		W	12	22x18	6	C	99				
		D	1/4	Wx	W	11	31x26	6	W	95				
		VC	1/4	Wx	M	12	24x18¾	8	C	150				
		Im	1/4	Wx	M	12	24x15¾	8	C	155				
Apex Products Co., 6463 E. Ravenswood Ave. Chicago, Ill.	"Apex"	O	1/6	GE RM	M	11	.....	6–9	TC	$99 135	$109 145			Chicago, Ill.
		O	1/4		M	12	.....	16	TC	155	165			
Apex Elec. Dist. Co., The 1067 E. 152nd St., Cleveland, Ohio	"Rotarex"	Cl	1/4	Own	M	12	17x18	8	G C	$152.50 $167.50	$157.50 $172.50	**G. A. Buckley,** 1405 Walnut St., Kansas City, Mo.	**The Apex Elect. Distrib. Co.,** San Francisco, Denver, Fresno **North Coast Electric Co.,** Portland, Seattle, Tacoma, Spokane **Electrical Equipt. Co.,** Butte **Illinois Elec. Co.,** Los Angeles **Inter-Mountain Elec. Co.,** Salt Lake City	Distributorxs
Automatic Elec. Washer Co., Newton, Iowa	"Automatic"	D	1/4	Wx GE	W or M	12	.....	6 and 12	C or W	$122.50	$132.50	**C. J. Reid,** 8 Front St., Portland **H. J. Holt,** 2206 High St., Oakland	**Inter Mountain Elec. Co.,** Salt Lake City	Oakland Los Angeles Portland
Barlow & Seelig Mfg. Co., Ripon, Wis.	"Big 3"	VC	1/4	Em	W	11 and 12	.....	6 to 8	C	VM $100 to $150	VM $110 to $165	**Dohrman Commercial Co.,** San Francisco **Big 3 Washer Shop,** 1616 4th Ave., Seattle	**Dohrman Commercial Co.,** San Francisco	Distributor
Brammer Washing Mach. Co.,	"De Luxe"	Cl	1/4	RM	Sw	12	22x23	8	GI TC	$165 $150		**H. J. Valentine,** Burbank, Cal.		Los Angeles
	"Ace"	Im	1/6	RM	Sw	12	20 dia.	8	TC W	$110 $100				
	"O. K."	D	1/4	RM	Sw	12	20 dia.	8	TC W	$115 $102.50				
Buckeye Churn Co., The Sidney, Ohio	"Prima"	O	1/4	GE	Sw	12	.....	8	W or Al	$160	.....	**V. S. Scott & Son,** 19 S. Roycroft Ave., Long Beach, Calif.	**V. S. Scott & Son,** 19 S. Roycroft Ave., Long Beach, Calif.	Distributor
Chicago Dryer Co., 2210-20 N. Crawford Ave., Chicago, Ill.	"Chicago"	O	1/4	Em	M	12 and 14	26x18 26x21 26x24	9 12 15	Cz	$200 to $375 VM	.....	.....	**M. E. Hammond,** Pacific Bldg., San Francisco **S. W. R. Daily,** Seattle **Maritzen-Kuns Co.,** Los Angeles	Distributors
Clarinda Mfg. Co., Clarinda, Iowa	"New Clarinda"	D	1/6	GE	M	12	24x29	6	C	$110	$120	**Thos. T. Hoffmire,** 6018 Vermont Ave., Los Angeles		
	"	D	1/6	GE	M	12	22x22	6	W	$80	$90			
	"	Cl	1/4	GE	M	12	25x25	6	C	$135	$145			
	"	O	1/4	GE	M	12	25x25	6	C	$120	$130			
Clement's Mfg. Co., 601-603 Fulton St., Chicago, Ill.	"Cadillac"	O	1/4	Wx	Sw	12	24x27	8	C	$150	.....	**J. J. Ross Mill Furnishing Co.,** Portland, Seattle **General Appl. Co.,** Los Angeles		
Coffield Washer Co., The Dayton, Ohio	"AA-1"	O	1/4	Sp	Sw	14	22x22	10	TC	$160	$165	**"Washer" Wilson,** 819 So. Hill St., Los Angeles	**"Washer" Wilson,** Los Angeles **Honeyman Hardware,** Portland **Poole Electric Co.,** Seattle	Distributors
	"DD-1"	O	1/4	Sp	Sw	12	22x17½	8	TC	$150	$155			
Conlon Corporation, 52nd Ave. and 19th St., Chicago, Ill.	"Incomparable Conlon"	Cl	1/4	GE	M	12	23x22	6	C GI	$180 $170	.....	**Woodill-Hulse Elec. Co.,** Los Angeles	Same **Welsbach Company,** 863 Mission St., San Francisco	Distributor
Davis Sewing Mch. Co., The Dayton, Ohio	"Blue Bird"	O	1/6	GE Wx	Sw	11	16½x27	8	C	$160	$160	**C. A. Eastman,** 213 Corbett Bldg., Portland	**Blue Bird Appliance Co.,** Seattle **Alexander & Lavenson,** San Francisco **K. P. Loop,** McMinnville, Ore.	San Francisco
Eden Washer Corp., 80 Maiden Lane, New York	"The Eden"	Cl	1/4 1/6	RM	Sw	12	24½x22	8 12	GI TC	.....	$160 $175 $185 $200	**L. M. Mintzer,** 200 Davis St., San Francisco	**L. M. Mintzer,** 200 Davis St., San Francisco **Woodill & Hulse Elec. Co.,** Los Angeles **Eden Serv. Sta.,** Portland	Distributors
Dawn Mfg. Co., The Stratford, Conn.	"Dawn"	VC	1/6	GE	Am	12	.....	6	....	$90	$93	**Beacon Light Co.,** Los Angeles, Calif.		336 S. Broadway, Los Angeles
Delco-Light Company, Dayton, Ohio	"Delco-Light"	O	1/6	DL	M	11	22x22	8	C	.....	$160	.....	**W. L. Cochran, Inc.,** San Francisco **Ivan L. de Jongh,** Los Angeles **Modern Appliance Co.,** Seattle	Distributors
Federal Electric Co., 8700 S. State St., Chicago, Ill.	"Federal"	O	1/4	Wx	L	....	32x27	8	C GI	$175	$175	**Federal Electric Co.,** Landregan & Powell Sts Oakland	**Lushington Elec. Co.,** Seattle, Wash. **Cook Bros.,** Los Angeles	Distributors
Foote-Burt Co., The Cleveland, Ohio	"Aerobell"	VC	1/4	GE	M	....	18½x24	8	C	$165	$175	**C. L. Hanson,** 5021 2d Ave., Los Angeles		Los Angeles
G. R. S. Products, Inc., Albany, N. Y.	"G-R-S"	Cl	1/4	Own	Sw	12	.....	8 to 18	C GI	$140 to $220	.....	**A. C. Holden,** 1964 Eldorado Ave., Berkeley	Dealers	Factory
Getz Power Washer Co., Morton, Ill.	"American Beauty"	O	1/4	Wx	M	12	24x26	6	C	$135	$145	**A. W. Evans,** 345 S. Rugby St., Los Angeles	Same	Los Angeles
		O	1/4	GE	M	12	26x28	8	C	$155	$165			
	New Model 30 Gyrator	O	1/6	Wx	W	11	24x26	6	C	$99	$109			
		D	1/4	GE	M	....	24x26	9	C	$155	$165			
Geyser Electric Co., 5008 Bloomingdale Ave., Chicago, Ill.	"Geyser"	Cl	1/4	Em Dom	L	11	.....	3 to 9	C GI	$75 to $175	$85 to $185	**Ion Arnold,** Westminster Hotel, Los Angeles	.....	Chicago, Ill.

WASHING MACHINE DIRECTORY

(CONTINUED)

Key to Abbreviations

O—oscillating type
VC—vacuum cup type
Cl—cylinder type
R—Rotary
D—dolly type
Im—impeller type
DFM—Dayton Fan & Motor Co.
Wx—Westinghouse
GE—General Electric
RM—Robbins & Myers
Em—Emerson
Dom—Domestic
Wg—Wagner
Cen—Century
L—Lovell
W—wood
M—metal
Sw—swinging
St—stationary
An—Anchor
Am—American
C—copper
TC—tinned copper
Cz—copper, zinc lined
GI—galvanized iron
Z—zinc
NP—Nickel Plated
VM—various models

Manufacturer	Trade Name	Operation	Motor		Wringer		Tub			Retail Price		Western Sales Representative	Western Distributor	Nearest Point At Which Repair Parts May Be Obtained.
			Horse Power	Maker	Type	Length in Inches	Dimensions	Capacity (Sheets)	Material	Eastern	West of Rockies			
Haag Bros. Co., Peoria, Ill.	"Haag"	D Cl O	1/4	GE RM Em	W M M	12	.....	6 6 7	W TC TC	$88 to $145	.....		**Richter Sales Co.,** Washington, Oregon, Western Idaho, Nevada, California **Hansen Distributing Co.,** Salt Lake City	Representative or Distributors
Horton Mfg. Co., Fort Wayne, Ind.	"Horton"	VC VC D D	1/4 1/4 1/6 1/6	GE GE GE DFM	M M M M	12 12 10 10	27x27 27x27 25x25 25x25	8 8 6 6	C VE C W	$155 $165 $122.50 $85	.....		**Baker Hamilton & Pacific Co.,** S. F. Hardware Jobbers **A. A. Wilson,** Los Angeles	Distributors
Hurley Machine Co., 22nd St. & 54th Ave., Chicago, Ill.	"Hurley Thor"	CL	1/6 1/6 1/4 1/4		M W W	11 12 14	.....	6 to 12	C or GI	$135 to $275	$145 to $285	**Hurley Machine Co.** **J. W. Ferry,** 425 Rialto Bldg., San Francisco	**Pacific States Electric Co.,** San Francisco, Los Angeles, Oakland, Portland and Seattle Long Beach, San Diego, Phoenix	All branches of distributor
Johnson Washer Co., 40th & Adeline Sts., Oakland, Cal.	"Johnson Impeller" "Johnson"	Im D	1/4 1/6	GE Wg	Sw St	11 11	14x22 14x22	6 6	C C	$100 to $165	$100 to $165	**Johnson Washer Co.,** 40th & Adeline Sts., Oakland, Cal.	Factory, Oakland **F. C. Dollarhide,** 1817 Industrial St., Los Angeles **Domestic Elect. Appl. Co.,** 1901 3rd Ave., Seattle, Wash. **Home Appliance Co.,** 87 Grand Ave., Portland, Ore. **L. Brandenberger,** Salt Lake City	Oakland Los Angeles Portland, Ore. Seattle, Wash.
Landers Frary & Clark, New Britain, Conn.	"Universal" "Whirlwave"	Cl O	1/4 1/4	RM Wx Wx	W M M	12 12 12	18x21 18x26	6 8	GI C C	$150 $162 $150	$150 $162 $150	**Landers, Frary & Clark,** Call Bldg., San Francisco	**Electric Appliance Co.,** San Francisco **Baker Hamilton & Pacific Co.,** S. F. **Seattle Hdwe Co.,** Seattle **Electric Corporation,** Los Angeles **Marshall-Wells Co.,** Portland	San Francisco and Los Angeles
Laundryette Mfg. Co., 1190 E. 152nd St., Cleveland, Ohio	Laundryette Wringerless Washer	VC	1/4	GE	No	ne	17½x26½	6	C	$160	$170	**Howard D. Mills,** Old Colony Club, Palace Hotel, San Francisco	**Modern Appl. Co.,** Seattle	Representative or Distributors
Maytag Co., The Newton, Iowa	"Maytag Gyrafoam"	Gyr	1/4	GE	Sw	12	22x22	6	A	$155	$165	**Chas. H. Long,** 1924 Broadway, Oakland, Calif.	**Maytag of Calif.,** Oakland and San Francisco **Schlueter's,** Los Angeles **Southern Electrical Co.,** San Diego **Maytag Intermountain Co.,** Salt Lake and Denver **Maytag Pacific Inc.,** Portland and Seattle **Holley-Mason Hardware Co.,** Spokane, Wash.	Representative or Distributors
Meadows Mfg. Co., Bloomington, Ill.	"Meadow Lark" "Greyhound" Master No. 2 Laundrola	Cl O Cl ... O	1/4 1/4 1/4	RM and GE	M M M	11 11 11	18x20 18x28 18x20 18x30 18x22	6 8 6 12 6	Gl C C GI C C	$135 $155 $150	$150 $165 $165 $125 $220 $130	**Clifford A. Williams,** 373 Brannan St., San Francisco	**Walcherson Elec. Sales Co.,** San Francisco **Fobes Supply Co.,** Portland, Seattle **Capital Elec. Co.,** Salt Lake City **Mine & Smelter Supply Co.,** Denver **Butte Elec. Supply Co.,** Butte	All Jobber Representatives
Modern Laundry Mch. Co., Kansas City, Mo.	"Mola"	Cl	1/4	.....	W	12	.....	.....	.....	$130	$135	**Geo. E. Prine,** care of A. A. Wilson, 606 S. Spring St., Los Angeles	**A. A. Wilson,** 606 S. Spring St., Los Angeles	Los Angeles
One Minute Mfg. Co., Newton, Iowa	"One Minute"	R D	1/3 1/4	Wx Wx	Sw Sw	12 12	.....	6 6	C W	$155 $99	$165 $106	**A. J. Ratelle,** 619 Pine St., Seattle	**Dohrmann Commercial Co.,** **Parmelee-Dohrman Co.,** Los Angeles	San Francisco
Puffer-Hubbard Mfg. Co., 2601-32nd Ave., S., Minneapolis, Minn.	"Daylight"	VC	....	Em	W M	12 12	.....	.....	C W	$155	$165	**Puffer-Hubbard Mfg. Co.,** 207 Railway Exchange, Portland	.....	.....
Savage Arms Corp., Utica, New York	Savage Washer and Dryer	R	1/4 1	Wx Wag	No	ne	26½x26	7	GI C	.....	.....	**C. W. Adams,** Rialto Bldg., San Francisco	**L. C. Warner Co.,** San Francisco, Seattle **Hansen Furn. & Music Co.,** Brigham, Utah	Distributors
Sunbeam Elec. Mfg. Co., Evansville, Ind.	"Sunbeam"	O	1/6	Wx	M	12	19x23	8 6 18	C	$155 $135 $235	$170 $150 $260	**F.M.Hills,**647SpreckelsBldg.,SanDiego **O. N. Dolph,** 800 Santa Fe Ave., Los Angeles	.....	San Diego
Sunny Line Appliances, Inc., 4058 Beaufait Ave., Detroit, Mich.	"Sunnysuds"	O	1/4		M	12	.....	...	C	$125 $135	$135 $145	.....	**Woodhill-Huise Elec. Co.,** L. A. **Poole Elec. Co.,** 1206-4th Ave., Seattle **Dohrmann Commercial Co.,** Los Angeles	
Syracuse Washing Mch. Corp., Syracuse, N. Y.	"Easy Vacuum Elec. Washer"	VC	1/6	GE RM	M	12	.....	8	C GI NP	$155 $125 $139	$165 $135 $149	**J. H. Gilson,** San Francisco **Syracuse Wash. Mach. Sales Co.,** 1109 Market St., San Francisco	**Syracuse Wash. Mach. Sales Co.,** 1109 Market St., San Francisco	San Francisco
The "1900" Washer Co., Binghamton, N. Y.	"Cataraction"	O	1/4	RM	Sw	....	.....	8	....	$155	$165	.....	.....	.....
Western Electric Co., New York City	"Western Electric"	Cl	1/6	Own	Sw	11½	22x23	6 to 8	GI TC	$145 $155	$155 $165	**Western Electric Co.,** San Francisco, Los Angeles, Oakland, Seattle, Tacoma, Portland, Spokane, Denver, Salt Lake City	**Western Electric Co.,** San Francisco, Los Angeles, Oakland, Seattle, Tacoma, Portland, Spokane, Denver, Salt Lake City	All Branch Offices
H. E. Williamson Co., 22 Grace St., San Francisco	"California Maid"	Cl	1/6	Cen	Sw	11	18x26	8	GI	.....	$125	**H. E. Williamson Co.,** San Francisco	.....	San Francisco
Woodrow Mfg. Co., Newton, Iowa	"Woodrow" "New Vertical Oscillat r"	Im VO	1/4 1/4	Em Em	Sw Sw	12 12	.....	6 6 6	W C C	$111.50 $124.50 $165	$115 $130 $175	**J. A. Woodrow,** 507 Guaranty Bldg., Hollywood, Cal.	**W. E. Dooley & Co.,** Seattle	Distributors or Representative

IDEAS FOR THE CONTRACTOR

Dealer Solves Problem of Cut-rate Competition

Unique and Inexpensive Plan of Solicitation Evolved by Portland Fixture Dealer Is Successful

To meet competition from cut-rate fixture dealers on low-priced jobs in Portland, a procedure involving the keeping down of the cost of interesting and selling the prospect, J. C. English, of the English Company of that city, has devised an unique and inexpensive campaign of solicitation.

Portland's extensive building program of the last eighteen months has included a great many small residences, built both for sale and for owners, within the price range of $2,500 to $5,000. When it is stated that a large majority of the 5,000 residences built in Portland in 1924 were within this range, it may be seen that the volume in the fixture business was considerable, even though the specifications allowed only $25 to $50 for this item of the cost of each house. The program for 1925 promises to exceed 1924 in this class of residences. Complicating the situation, however, is the fact that a number of cut-price fixture dealers are after the business with a cheap line of fixtures, mainly by means of newspaper advertising featuring price only.

It should be understood here that the English Company is a fixture store exclusively. Not only standard fixtures of all prices are made and carried in stock, but also the most elaborate and distinctive kind of fixture is designed and manufactured to order. Mr. English, in determining to enter the field of the small job on a profitable basis, standardized and produced a small line of fixtures suited to the different rooms of the modern low-priced dwelling, and pictured these in a neat catalog convenient for mailing. These fixtures are displayed in a separate room on a different floor from the main sales room, and in keeping this class of business separate from the main business of the concern a two-fold advantage results. The customer of moderate means is not scared out by seeing around him the better fixtures at the higher prices; nor is the customer desiring the best in fixtures brought in contact with the cheaper goods, which might tend to cheapen the store in the eyes of that customer.

With this standardization of comparatively cheap fixtures as a basis, he built his campaign around a series of three sales letters ending in a particularly strong appeal designed to bring the prospect into his store. The first of these letters, sent twenty days after the issuance of the electrical permit, calls attention to the decrease in the cost of fixtures in spite of the increase in the cost of labor and material, due, as it is stated, to the policy of standardization of product. This letter informs the prospect that a catalog is in preparation and will be sent to him later, and enclosed with it is a handy 6-inch ruler carrying the English Company advertisement. The second letter, sent three weeks after the first, has enclosed with it the catalog referred to in the first, and calls attention to the fact that this catalog contains "only a few of the hundreds of suggestions we have on display." The third, in the form of a printed card, is sent out about two or three weeks later, depending on the progress of the construction, and informs the prospect that an estimate on the fixtures for his house has been made and is on file at the office, and invites the prospect to call to see what fixtures have been suggested.

Pasteboard sign which is used by the English Company in selling fixtures against cut-rate competitors

In the meantime an estimate actually has been made, and the final "punch" to the appeal has been delivered by the company representative making such estimate, in this way. A pasteboard sign, cut in the shape of a lantern and printed in black and yellow, facsimile of which is shown, is hung by the estimator on one of the center outlet wires of the living room of the house, after the roughed-in wiring job is completed and prior to the completion of the interior finishing of the house. This sign, like the third letter sent out coincidentally, informs the owner or prospective purchaser of the house that "An estimate on the lighting fixtures for this house is ready for you at English Company". The attractiveness of the sign, its conspicuous location, the personal "punch" of its message implying thorough and intelligent treatment of the prospect's needs, all combine to make an appeal that is difficult to resist, particularly after the prior messages have paved the way for this climax.

It is a simple matter for a representative to visit many of these houses in a day and jot down a suitable selection of fixtures. This estimate is filed at the store to await the arrival of the prospect.

When the prospect enters the store the battle is half won. An experienced salesman here shows him the fixtures chosen on the estimate and talks home lighting to him with such effect as often to cause him to reject the cheap fixtures of the estimate in favor of others of a more attractive type and more expensive, in which, of course, there is a larger profit.

It readily may be appreciated that this procedure is simple and inexpensive. It is also apparent that some good sales psychology is utilized in that the customer is made to understand that intelligent consideration has been given his fixture problem, and he probably believes that more effort has been put on his problem than actually has been. That the campaign has been productive of results is indicated by the following figures supplied from the records of the English Company. In the last twenty days of June, 1925, 240 electrical permits were issued in Portland for houses of this class. This method of solicitation was applied to nearly all these, and forty per cent of the prospects responded to the appeal by going to the store. Sixty-seven per cent of these actually bought their complete fixture outfits from the English Company.

New Rules Put Into Effect by Department of Electricity

Many subjects of interest to contractors everywhere were included in a number of rules which recently were put into effect in San Francisco by Ralph W. Wiley, chief of the department of electricity of that city. They are as follows:

1. Permits for fixtures must be taken out and posted on the job the same as for wiring, in accordance with the provisions of Section "C" of Ordinance No. 5192.

2. Inspection fees must be paid in advance before permit will be issued.

3. Provisions of Ordinance No. 5192, Section "S," will be enforced, i. e., an extra fee of $2.50 will be charged if the

inspector visits a job and finds that the work has been performed without a permit.

4. Section "Y" of Ordinance No. 5192 will be interpreted to allow the omission of a switch in rooms having running water or piping for same, unless socket is within 8 ft. vertical and 5 ft. horizontal of any grounded surface, except in kitchen, laundries, bathrooms or permanently damp places.

Section "Y"

All lights, fixtures and brackets within 7 ft. of grounded surfaces or in rooms which have running water or piping for same, must be controlled by wall switches and must be provided with keyless sockets; provided that in basements porcelain key sockets may be used in lieu of wall switches and keyless sockets.

5. Flexible metallic conduit will not be approved in lieu of rigid conduit in new work on jobs filed after June 1, 1925. The provisions of Section "M" of Ordinance No. 5192, governing the method of electrical installations, will be strictly enforced.

Section "M"

All wires hereafter installed in or on all buildings or other structures in the City and County of San Francisco, except in dwellings and flats as the same are now or may hereafter be defined in the Building Law of the City and County of San Francisco, and used for the purpose of conducting electricity, shall be enclosed in iron conduits or other armor as hereinabove set forth.

This rule rescinds Section No. 1 and that portion under the caption "Flats and Dwellings" of Order No. 5 of Sept. 1, 1922, and Order No. 6 of same date, effective April 1, 1925.

6. Hereafter contractors desiring an inspection or any information regarding a job, either over the telephone or at the office, must give the permit number, in addition to the street number or street location. Inspections must be called for at least twelve (12) hours in advance.

7. That portion of Section "Z" of Ordinance No. 5192 relating to service wires applies to service or sub-service only and not feeders or sub-feeders, and will require switch and fuse capacity for No. 4 wire (100 amp. switch).

Section "Z"

Not more than one set of feed or service wires shall be installed in a single conduit. No service wire shall be smaller in size than No. 12 B. & S. gage. Height of building permitting, no service wire shall be nearer to the ground than 20 ft., provided, however, that nothing in this rule shall apply to any service wire in the "underground districts." In making calculations for the proper size of service or feed wires, the following rules shall be observed: In all buildings or other structures where 20 or less branch circuits are installed, each circuit shall be assumed to be fully loaded. In all buildings or other structures where more than 20 circuits are installed the actual connected load shall determine the size of service or feed wire, but in no case shall the size be less than No. 4 B. & S. gage.

8. Sign feeds must not be smaller than No. 12 B. & S. gage.

9. The ungrounded legs of all underground services must be lead-covered. Feeders, sub-feeders or branch circuits running underground may be rubber-covered provided they are protected by the proper size fuse or automatic protection. Varnished cambric conductors will be permitted in lieu of rubber-covered in all sizes larger than No. 8 and where no dampness is prevalent.

10. When plug receptacles are installed for radio, such receptacles must be of the type used exclusively for radio work. Approved lighting or power receptacles will not be permitted for this class of work.

11. Insulating joints will not be required on straight electric fixtures where gas-filled lamps are used and wired with not smaller than No. 16 approved slow-burning wire.

12. Chain type fixtures will be approved in breakfast nooks.

13. Installation of flexible conduit must conform to all provisions of Rule No. 28, National Electrical Code (page 73) and may be installed in the same manner as rigid conduit.

14. The use of the so-called identified wire (white, gray or any color other than black) will not be permitted for use except as a grounded conductor, e. g., it must not be used on a two-wire 220-volt circuit or a three-phase circuit.

15. Outlets on rear of tradesmen's stairs or landings of apartments, if controlled by switches in tenants' apartments, may be connected to the respective tenants' meters. They will not be considered as emergency lights, and, therefore, need not be so installed.

16. **Amendment to Order No. 8:** Section No. 10 of Order No. 8 is hereby changed to read as follows:

A sufficient number of lighting circuits shall be installed and uniformly distributed to provide for a minimum of one watt per sq.ft. of floor area on the first floor, and any portion of any other floor used as retail stores, salesrooms, display rooms, or offices in any commercial or industrial buildings, and a minimum of .5 watt per sq.ft. of floor area shall be provided in all other portions of buildings when not used as defined above. Effective on all work filed after Dec. 15, 1924.

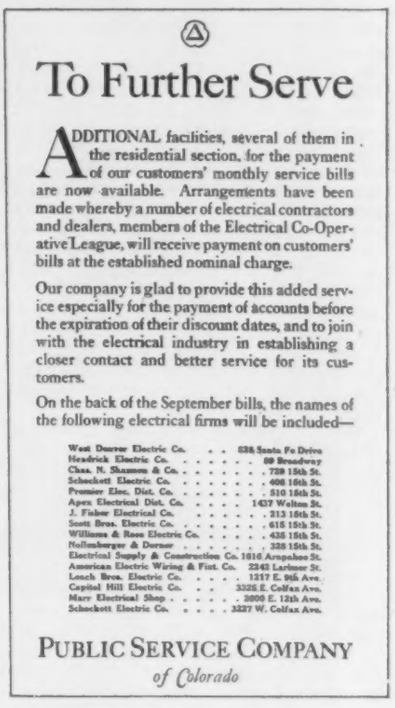
17. When plug receptacles are installed in floors, they must be of the fully-covered type.

18. **Services:** Where the combination of load on two or more meters would cause an unbalanced condition on the service, the service conductors must be equal in size and of sufficient capacity to carry the largest of the two or more loads.

19. **Location of Meters in Flats or Residences:** When the construction and conditions of the building will permit in residences and flats, meters shall be so located that they can be read without entering a locked portion of the building.

Customers Pay Service Bills at Electrical Dealers' Stores

Arrangements have been made in Denver, Colo., through the efforts of the Electrical League of Colorado, formerly the Electrical Co-operative League, whereby customers of the Public Service Company of Colorado may pay their monthly service bills at electrical dealers' stores. This system has proved practical, especially in the residential districts.



To Further Serve

ADDITIONAL facilities, several of them in the residential section, for the payment of our customers' monthly service bills are now available. Arrangements have been made whereby a number of electrical contractors and dealers, members of the Electrical Co-Operative League, will receive payment on customers' bills at the established nominal charge.

Our company is glad to provide this added service especially for the payment of accounts before the expiration of their discount dates, and to join with the electrical industry in establishing a closer contact and better service for its customers.

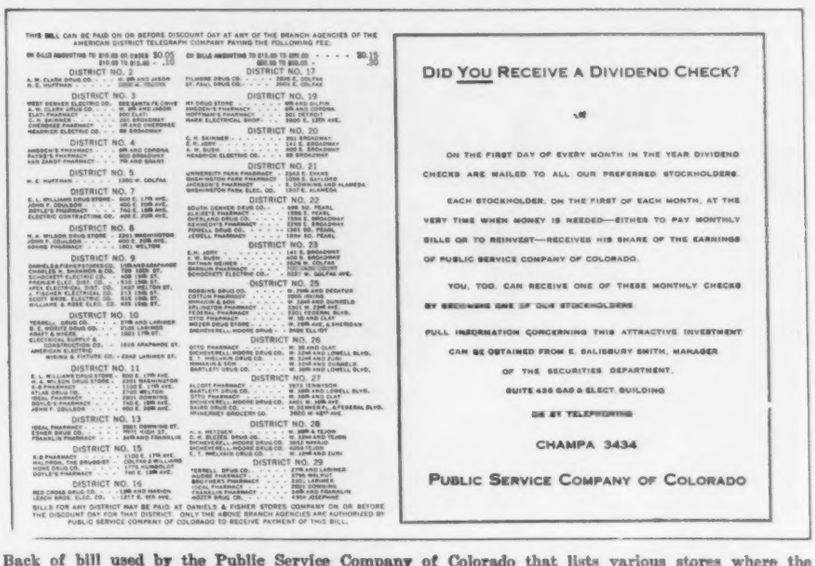
On the back of the September bills, the names of the following electrical firms will be included—

West Denver Electric Co.	538 Santa Fe Drive
Headrick Electric Co.	89 Broadway
Chas. N. Shannon & Co.	739 15th St.
Schockett Electric Co.	606 16th St.
Premier Elec. Dist. Co.	510 16th St.
Apex Electrical Dist. Co.	1437 Welton St.
J. Fisher Electrical Co.	313 15th St.
Scott Bros. Electric Co.	615 15th St.
Williams & Ross Electric Co.	436 15th St.
Nollenberger & Dorner	328 15th St.
Electrical Supply & Construction Co.	1616 Arapahoe St.
American Electric Wiring & Fixt. Co.	2242 Larimer St.
Leach Bros. Electric Co.	1217 E. 9th Ave.
Capitol Hill Electric Co.	3325 E. Colfax Ave.
Marr Electrical Shop	2000 E. 12th Ave.
Schockett Electric Co.	3227 W. Colfax Ave.

PUBLIC SERVICE COMPANY
of Colorado

Advertisement giving the names of the electrical firms where bills of the Public Service Company of Colorado may be paid

The Public Service Company is cooperating thoroughly in the arrangement, and has provided this added service as a means of establishing closer contact with and better service for its customers.



THIS BILL CAN BE PAID ON OR BEFORE DISCOUNT DAY AT ANY OF THE BRANCH AGENCIES OF THE AMERICAN DISTRICT TELEGRAPH COMPANY PAYING THE FOLLOWING FEE:

ON BILLS AMOUNTING TO $10.00 OR UNDER $0.05
$10.00 TO $15.00 - .10
ON BILLS AMOUNTING TO $15.00 TO $20.00 - - - - $0.15
$20.00 TO $50.00 -
.50

DISTRICT NO. 2
A. W. CLARK DRUG CO. - - W. 6th AND JASON
H. E. HUFFMAN - - - - 2200 E. COLFAX

DISTRICT NO. 3
WEST DENVER ELECTRIC CO. 606 SANTA FE DRIVE
CLARK PHARMACY - - - 6th AND JASON
ELECTRIC SHOP - - - - 1512 CLARK
C. N. SKINNER - - - - 201 BROADWAY
CHEROKEE - - - - - 28 AND CHEROKEE
HEADRICK ELECTRIC CO. - - 89 BROADWAY

DISTRICT NO. 4
ANDERSEN'S PHARMACY - - 6th AND CORONA
PATRIE'S PHARMACY - - - 6001 BROADWAY
VAN ZANDT PHARMACY - - - 7th AND BANNOCK

DISTRICT NO. 5
H. E. HUFFMAN - - - - 2200 W. COLFAX

DISTRICT NO. 7
E. L. WILLIAMS DRUG STORE - - 600 E. 17th AVE.
JOHN F. COULSON - - - - 400 E. 20th AVE.
ODELL PHARMACY - - - - 740 E. 20th AVE.
ELECTRIC CONTRACTING CO. - 400 E. 20th AVE.

DISTRICT NO. 8
H. A. WILSON DRUG STORE - - 2201 WASHINGTON
JOHN F. COULSON - - - - 400 E. 20th AVE.
ODELL PHARMACY - - - - 1401 WELTON

DISTRICT NO. 9
DANIELS & FISHER STORES CO. - 16th AND ARAPAHOE
CHARLES H. SHANNON & CO. - 739 15th ST.
CHARLES H. SHANNON - - 739 15th ST.
PREMIER ELEC. DIST. CO. - - 510 15th ST.
APEX ELECTRICAL DIST. CO. - 1437 WELTON ST.
J. FISCHER ELECTRICAL CO. - 313 15th ST.
SCOTT BROS. ELECTRIC CO. - 615 15th ST.
WILLIAMS & ROSS ELEC. CO. - 436 15th ST.

DISTRICT NO. 10
TERRELL DRUG CO. - - - 27th AND LARIMER
D. E. MORITZ DRUG CO. - - 3120 LARIMER
KNAPP & MYERS - - - - 1601 17th ST.
ELECTRICAL SUPPLY & CONSTRUCTION CO. - 1616 ARAPAHOE ST.
AMERICAN ELECTRIC WIRING & FIXTURE CO. - 2242 LARIMER ST.

DISTRICT NO. 11
E. L. WILLIAMS DRUG STORE - 600 E. 17th AVE.
G. S. WILLIAMS DRUG STORE - 1100 E. 17th AVE.
K-B PHARMACY - - - - 1100 E. 17th AVE.
ATLAS DRUG CO. - - - - 2100 WELTON
IDEAL PHARMACY - - - - 2201 DOWNING
DOYLE'S PHARMACY - - - - 1601 16th AVE.
JOHN F. COULSON - - - - 400 E. 20th AVE.

DISTRICT NO. 13
IDEAL PHARMACY - - - - 2201 DOWNING ST.
ESSNER DRUG CO. - - - - 1901 HIGH ST.
FRANKLIN PHARMACY - - - - 2400 AND FRANKLIN

DISTRICT NO. 15
K-B PHARMACY - - - - 1100 E. 17th AVE.
HALLIDAY, THE DRUGGIST - - COLFAX & WILLIAMS
HOME DRUG CO. - - - - 1775 HUMBOLDT
DOYLE'S PHARMACY - - - - 740 E. 19th AVE.

DISTRICT NO. 16
RED CROSS DRUG CO. - - - 19th AND MARION
LEACH BROS. ELEC. CO. - - - 1217 E. 9th AVE.

BILLS FOR ANY DISTRICT MAY BE PAID AT DANIELS & FISHER STORES COMPANY ON OR BEFORE THE DISCOUNT DAY FOR THAT DISTRICT. ONLY THE ABOVE BRANCH AGENCIES ARE AUTHORIZED BY PUBLIC SERVICE COMPANY OF COLORADO TO RECEIVE PAYMENT OF THIS BILL.

DISTRICT NO. 17
TILMORE DRUG CO. - - - 2536 E. COLFAX
ST. PAUL DRUG CO. - - - 2001 E. COLFAX

DISTRICT NO. 19
MY DRUG STORE - - - - 6th AND GILPIN
CLARK PHARMACY - - - - 6th AND JASON
HOFFMAN PHARMACY - - - 3000 E. 28th AVE.
MARK ELECTRICAL SHOP - - 2600 E. 12th AVE.

DISTRICT NO. 20
C. N. SKINNER - - - - 201 BROADWAY
E. H. JOHN - - - - 141 E. BROADWAY
E. W. BUSH - - - - 400 E. COLFAX
HEADRICK ELECTRIC CO. - - 89 BROADWAY

DISTRICT NO. 21
UNIVERSITY PARK PHARMACY - 2342 E. EVANS
WASHINGTON PARK PHARMACY - 2700 S. GAYLORD
ANDERSEN'S PHARMACY - - 1001 E. 2ND AND ALAMEDA
WASHINGTON PARK ELEC. CO. - 1310 E. ALAMEDA

DISTRICT NO. 22
SOUTH DENVER DRUG CO. - - 1096 S. PEARL
ELLIOTT'S PHARMACY - - - 1001 S. PEARL
OUTLAND DRUG CO. - - - 1594 S. BROADWAY
GEARHART'S PHARMACY - - 2200 S. BROADWAY
POWELL DRUG CO. - - - 1301 SO. PEARL
ODELL PHARMACY - - - 1896 SO. PEARL

DISTRICT NO. 23
E. H. JOHN - - - - 141 E. BROADWAY
E. W. BUSH - - - - 400 E. COLFAX
NATHAN MEHRER - - - - 2124 W. COLFAX
BOOKSTAFF ELECTRIC CO. - - 3227 W. COLFAX AVE.

DISTRICT NO. 25
ROBBINS DRUG CO. - - - 2598 SO. 25TH AND DEXTER
COTTON PHARMACY - - - 1900 OGDEN
HYMAN & SON - - - - W. 32ND AND DUNKELD
ARLINGTON PHARMACY - - - 2301 W. 32ND AVE.
FEDERAL PHARMACY - - - 2301 FEDERAL BLVD.
OTTO PHARMACY - - - - W. 38TH AND CLAY
WOLFF DRUG STORE - - - W. 38TH AVE. & SHERIDAN
BRUNTWELL-MOORE DRUG CO. - 3900 ELLIOTT

DISTRICT NO. 26
OTTO PHARMACY - - - - W. 38TH AND CLAY
BRUNTWELL-MOORE DRUG CO. - W. 38TH AND LOWELL BLVD.
E. T. WELLMAN DRUG CO. - - W. 32ND AND JUN
HYMAN & SON - - - - W. 32ND AND DUNKELD
BARTLETT DRUG CO. - - - W. 38TH AND LOWELL BLVD.

DISTRICT NO. 27
ALCOTT PHARMACY - - - 3573 TENNYSON
BARTLETT DRUG CO. - - - W. 38TH AND LOWELL BLVD.
OTTO PHARMACY - - - - W. 38TH AND CLAY
BRUNTWELL-MOORE DRUG CO. - W. 38TH AND LOWELL BLVD.
SALMO DRUG CO. - - - - W. DOWNING & FEDERAL BLVD.
WHINERAY GROCERY CO. - - 3900 W. 40TH AVE.

DISTRICT NO. 28
H. A. METZGER - - - - W. 38TH AND ELDON
C. A. ELLERS DRUG CO. - - W. 38TH AND TEJON
BRUNTWELL-MOORE DRUG CO. - 3532 HARO
BRUNTWELL-MOORE DRUG CO. - 4200 TEJON
E. T. WELLMAN DRUG CO. - - W. 32ND AND JUN

DISTRICT NO. 29
TERRELL DRUG CO. - - - 27th AND LARIMER
MOORE PHARMACY - - - 2701 SO. PLT
BROTHERS PHARMACY - - - 2301 LARIMER
FRANKLIN PHARMACY - - - 2400 AND FRANKLIN
MOZER DRUG CO. - - - - 4304 JOSEPHINE

DID YOU RECEIVE A DIVIDEND CHECK?

ON THE FIRST DAY OF EVERY MONTH IN THE YEAR DIVIDEND CHECKS ARE MAILED TO ALL OUR PREFERRED STOCKHOLDERS.

EACH STOCKHOLDER, ON THE FIRST OF EACH MONTH, AT THE VERY TIME WHEN MONEY IS NEEDED—EITHER TO PAY MONTHLY BILLS OR TO REINVEST—RECEIVES HIS SHARE OF THE EARNINGS OF PUBLIC SERVICE COMPANY OF COLORADO.

YOU, TOO, CAN RECEIVE ONE OF THESE MONTHLY CHECKS BY BECOMING ONE OF OUR STOCKHOLDERS.

FULL INFORMATION CONCERNING THIS ATTRACTIVE INVESTMENT CAN BE OBTAINED FROM E. SALISBURY SMITH, MANAGER OF THE SECURITIES DEPARTMENT,
SUITE 426 GAS & ELECT. BUILDING
OR BY TELEPHONING
CHAMPA 3434

PUBLIC SERVICE COMPANY OF COLORADO

Back of bill used by the Public Service Company of Colorado that lists various stores where the bill may be paid. It also calls attention to the value of holding stock in the company

Contractor Has Efficient Shop and Store-Room Methods

A. V. Cline of Cline's Electric Shop, San Luis Obispo, Calif., has devised an efficient arrangement and method of conducting his shop and store room that can be adopted easily by any electrical contractor doing a corresponding volume of work. Mr. Cline does not have a regular stock clerk, and each journeyman is expected to assemble the material he needs for any particular job.

A number of bins are built along one side of the store room; in these, various classes of material are arranged in logical order. All of the finish material is kept together, as is the meter equipment and the like; all material for a particular operation being grouped in this manner. This saves a great deal of time in getting the material ready for any job. Mr. Cline uses a unit system instead of keeping an accurate stock record. A small card is placed on the front of each bin that states that a certain additional quantity should be ordered when the supply reaches a predetermined low point; that is, the card on a certain bin might read, "Down to 5, order 10". The man who reduces the stock to this amount immediately makes note of this fact on an order pad provided for this purpose.

Wire is arranged on coils at one end of the receiving bench; knobs and tubes are arranged in bins below the table. Wire which is scrapped on being returned from jobs is a source of considerable loss to most contractors. Mr. Cline has solved this problem by arranging his various sizes of wire on racks made of pipe extending perpendicular to the wall. When a journeyman returns from a job with some wire, he measures this and after marking the size and the number of feet on a tag, he attaches this tag to the coil and places it on its proper rack. The amount then is credited to the original job. When a journeyman is going out to make an installation which only requires a few feet of wire he is expected to look at the rack and see if approximately this amount of wire is not already measured up for him, instead of cutting this short length from a new coil, which is the usual wasteful method employed.

All material is marked with the selling price only. It is charged out to each job at this selling price, regardless of whether or not it is a contract or a time-and-material job. The journeyman does not know what kind of a job he is working on from this standpoint. Mr. Cline believes that the material should bring the retail price, regardless of whether the job was taken on a contract or time-and-material basis. At the completion of each job, it is checked up by the bookkeeper to see just what the profit or loss has been, and this is brought to the attention of Mr. Cline immediately.

Mr. Cline has all booklets of manufacturers filed in a closet. When these become obsolete they are distributed in machines on the streets rather than having them destroyed. In this way they do some good instead of being a complete loss.

Building Contractor Sponsors Modern Electric Home

One of the model homes to be displayed recently in Oakland, Calif., was built and sponsored by R. C. Hillen, a building contractor. Casa Romero, as this model home was called, is of Spanish-Moorish type of architecture. It was built in the Court of All Nations, a new residential district made unusual by the presence of French, English, Italian, Belgian, Swedish and other homes of foreign types built by Mr. Hillen, after being planned and designed by W. W. Dixon, Oakland architect. Mr. Dixon also is editor of the Home Designer Magazine, which is published by Dixon and Hillen.

The home, completely furnished, was open daily for inspection during two weeks, with a hostess in charge. A great deal of newspaper publicity and advertising drew attention to the home during this period. In all of this publicity especial emphasis was placed on its electrical features.

Every comfort of the modern American home was provided in the house. Electricity played a most conspicuous part in making this possible. The house was heated with Majestic flush-type air heaters, this load totaling 14.5-kw. A 7-kw. all-white-enamel Hotpoint range occupied a prominent place in the kitchen. The kitchen also was provided with a ventilating fan. Water was heated with a 5-kw. Thermelect heater. The laundry was adequately equipped with labor-saving devices, including an electric washing machine and electric ironer.

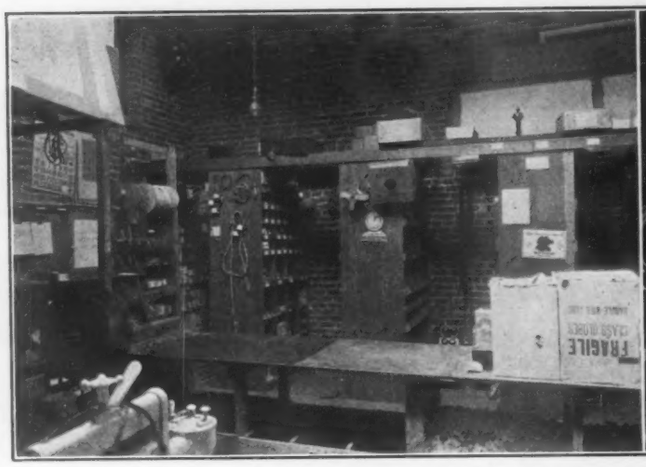
Radio Is Feature

Probably the most unusual part of the electrical installation was that of the radio, which was installed in the studio-living room. The rare acoustic properties of this room 18 x 36 ft. in size, and 18 ft. high, was utilized fully. The loud speaker was hidden behind what appeared to be a pipe organ in the balcony above. The tone, released from this height, was finer and sweeter than when heard in an ordinary room, and more natural. The Radiola super-heterodyne was located conveniently at the lower left-hand corner of the long room. Wiring and outlets were installed so that connections could be made by either loud speaker or ear phones in any room in the house.

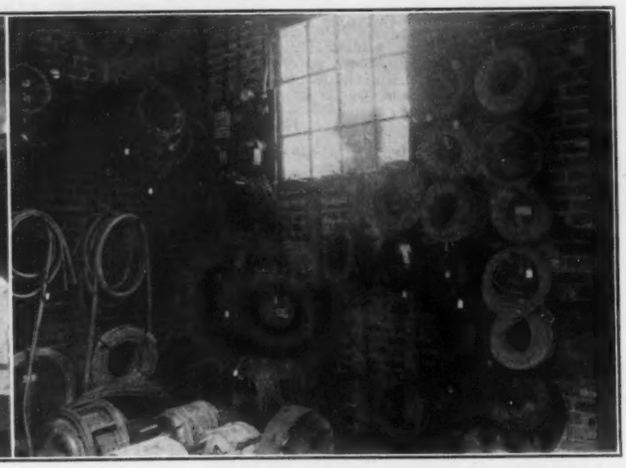
The many smaller electrical appliances were displayed prominently, including coffee urn, percolator, waffle iron, toaster and vacuum cleaner. The sewing room, built on the mezzanine floor, was equipped with an electric sewing machine. The lighting, designed with particular regard for the kind of work to be done in the room, was an especially attractive feature.

The lighting throughout the home was given careful treatment, and all the bracket lights in the bedrooms and den were properly shaded so as to prevent glare. Tables, bridge and floor lamps were located conveniently in the different rooms to provide proper light for reading, sewing and similar uses. The general lighting in the kitchen was supplied from a totally enclosed unit in the center of the ceiling, and local lighting over the sink was provided from a shaded lamp. The living room and bedrooms were lighted entirely from brackets on the walls.

From the electrical industry's viewpoint, this home was very unusual in that it was sponsored and built by a building contractor. Mr. Hillen makes the electrical installation a feature in all of the homes he builds, and this fact is brought forth prominently in all advertising and publicity regarding the houses. This builder has taken advantage of the tremendous value of a complete electrical installation as an argument in selling modern homes.



Store room of Cline's Electric Shop showing material bins and receiving table, which also is used for measuring wire and assembling material.



Corner of shop showing method of storing stock of wire. Small quantities are measured and tagged before being placed in stock for future use.

PICTURES of Casa Romero, modern electric home which was built and sponsored by R. C. Hillen, a building contractor in Oakland, Calif. The studio-living room is shown in the picture on the right in the second row from the top; the pipe-organ radio may be seen in the center of the balcony. The Radiola is located at the lower left-hand corner of the room. The lower picture of the kitchen shows the ventilating fan and some of the smaller appliances. The electric ironer and washing machine are to be seen in the laundry room to the left. The picture of the bedroom shows the electric air heaters and the radio loud speaker. Note that all of the bracket lamps are shaded.

CENTRAL STATION CONSTRUCTION OPERATION AND MAINTENANCE

Power Company Communication Systems — I (a)

Protective Equipment Especially Important Where High-Line Telephone Lines Are on Power Poles

By H. N. KALB*, Telephone Engineer, San Joaquin Light & Power Corporation, Fresno, Calif.

Demands made upon the electric light and power companies of today for service are extremely exacting. The home wants electric lights and seldom makes provision for the electricity being off, beyond having one or two candles

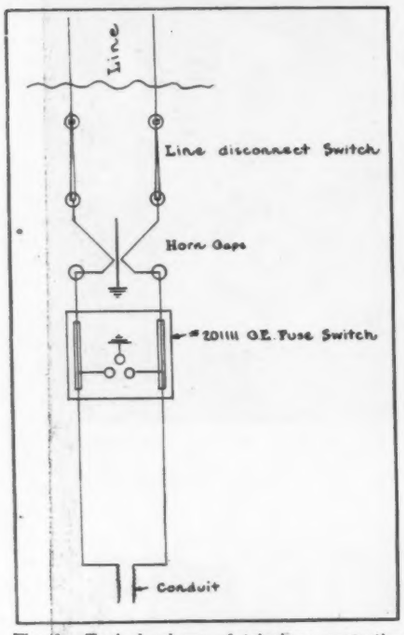


Fig. 1. Typical scheme of telephone protection at substations

stored away some place or maybe a small flashlight in the side door of the automobile. The movie theater depends upon 100 per cent electric service from about noon to midnight. Factories depend upon electric motors to operate continuously all day and sometimes during the night hours. The bakery must have continuous service once it starts making a batch of bread or pastry and the ice company must have continuous service or it will lose much of its product. Motors furnishing the water supply for a town or city must have power at all times or serious handicap may result in case of fire. And so on through regular daily life are becoming more and more exacting the requirements for uninterrupted electric service.

In order to insure against serious interruptions it is necessary then that a power company have more than one source of power and that these sources be separated by some distance and transmit their power over separate transmission lines. This modern arrangement is such that it would be necessary to have several simultaneous cases of serious trouble scattered over a large area before service would receive more than a momentary interruption. With this thought in mind the next question is, how can these remotely located generating stations and the attending substations best be kept in constant communication with one central point where the whole system can be controlled and the power supply changed from one point to another as load conditions may necessitate.

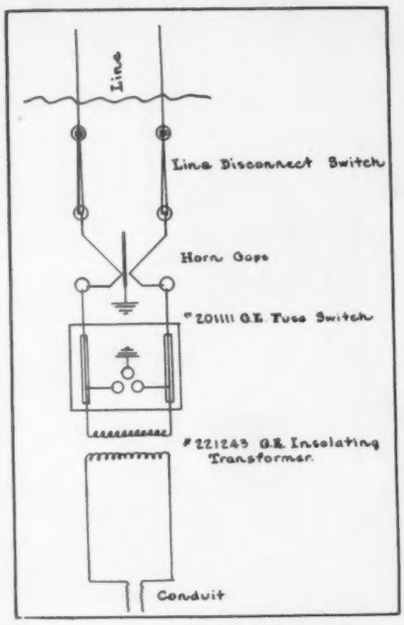


Fig. 2. Typical scheme of telephone protection at offices and power houses

There is no means of communication that is as universally used and as well understood as speech. The best method of transmitting speech is by telephone. This may be by wire or by space radio, but the most common way is by means of wire lines. Wire lines for telephone service have reached a point of high development as applied to public use. In connection with their use by power companies the requirements are even more exacting than for public use. Power companies usually have a load dispatcher located at or near headquarters and this load dispatcher must be able to talk to all power houses, substations and repair crews with a minimum of delay. A delay or a wrong order given or an order misunderstood may mean the loss of much money to the power company or to the consumer or it many mean even the loss of lives. Therefore it is essential that this dispatcher have the best possible communication service with all points on the system or the whole system may fail. The communication lines are the nerves of the whole power system and therefore must be protected and cared for in the best possible manner.

To provide an adequate communication system for power companies, wire telephone lines usually are provided, and to receive the maximum benefit from these lines with the least expense they generally are placed on power line poles. These power poles usually carry voltages varying from 10,000 to 70,000. As it is known that power wires do break and fall down, it is necessary to provide protection that will protect fully not only the users of the telephone but the apparatus as well. It must be remembered also that when a telephone wire is placed close to a power wire the telephone wire becomes charged by induction to an extent which varies inversely as the distance between the telephone and the power wires. This is only an approximate ratio and will be taken up again.

The first thing, then, that must be provided for on telephone lines carried on power poles is protection—adequate protection. What is the voltage of the

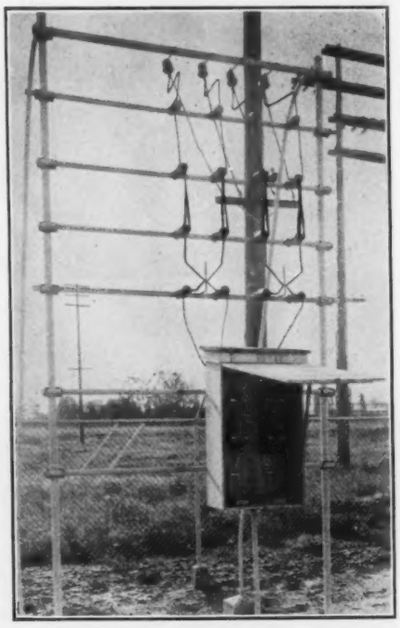


Fig. 3. Typical 3-line telephone protection rack

* All rights reserved by the author.

power wires above the telephone wires? Most power companies have telephone circuits on power poles which carry not over 70 kv., as above that power-line voltage the operation of telephone lines requires so much separation from the power wires that the increased cost of the pole line (due to the necessity for higher poles) becomes a deciding factor. Usually it is more economical to build a separate pole line for the telephone wires. So it may be considered that 70 kv. is the highest voltage against which protection will be needed.

In protecting power company telephone lines the equipment must be such that it will operate readily, will care for large currents and when the disturbance is over with will leave the line clear for operation. There always will

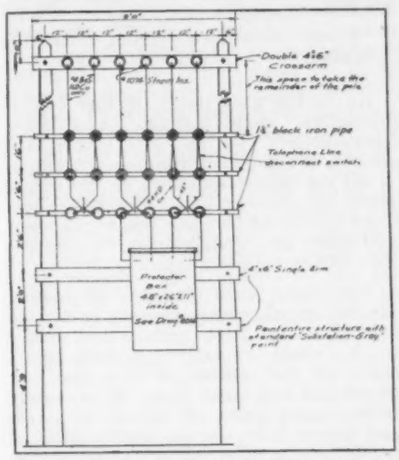

Double 4"x6" Crossarm
This space to take the remainder of the pole
1" black iron pipe
Telephone Line disconnect switch
4"x6" Single Arm
Protector Box 48"x16"x11" inside.
See Drawing
Pentagon structure with standard "Substation-Gray" paint

Fig. 4. Design details of three-line telephone protection rack for substations using wood construction

be cases in which this protective apparatus can not clear itself after the disturbance so that equipment must be located where there is an attendant in order to insure against a prolonged interruption. It has been found by test and by experience that a 16-in. gap will break all arcs formed on these telephone lines. Therefore all line disconnects and paralleling switches are made on 18-in. centers or with a 16-in. minimum clearance. On the station side of the line disconnect switches are installed horn gaps made of No. 4 hard-drawn copper and set 50 mils from a ⅝-in. steel ground rod. From the station side of these horn gaps the line is taken through expulsion-type fuses which are filled with ½-amp. fuse wire. This fuse wire is doubled except for the lower 1½ in., which point is in the expulsion chamber.

This fuse must be placed in a vertical position and with the expulsion chamber at the lower end. On the station side of these fuses a set of arcing gaps, either knurled or sawtooth, is set with a spacing of about 15 mils. This is for telephone lines which operate with a normal voltage to ground of 400 volts or less. These expulsion-type fuses should have a clearance between upper and lower ends of not less than 10 in. From the station side of the fuses the line may be taken through underground conduit directly to the telephone switches in the substation by the use of No. 14 copper rubber-covered wire. (For schematic diagram see Fig. 1.) In such a case the operator should be provided with an insulated platform on which to stand while using the telephone so that he will be amply protected in case of power line disturbances.

Where the telephone line is to be taken into a power house or into an office a telephone insulating transformer is interposed between the station side of the fuses and the conduit. (For schematic diagram see Fig. 2.) It must be remembered that the case of this transformer must be grounded securely in order to remove any possible static charge that might be passed between windings in the transformer. After this has been done the final test is to place one hand on the incoming wires and the other hand on any ground connection. If any voltage is present the installation is defective. An ordinary voltmeter cannot be used for this test as it is not delicate enough to give an indication. The insulation on these transformers is tested for 25 kv. and although designed for outdoor use it is well to have them protected from the weather. The insulating compound is affected to a considerable extent by extreme temperatures.

This protective equipment should be mounted on suitable supports out of doors as shown in Fig. 3 and Fig. 4. Fig. 4 shows the use of wood poles, but a better and not much more expensive job can be made by the use of pipe as shown in Figs. 3 and 5. These protection racks are designed in two sizes, one for a maximum of 3 lines and one for a maximum of 5 lines. A one-line installation is shown in Fig. 6. This is for mounting on the outside of a brick

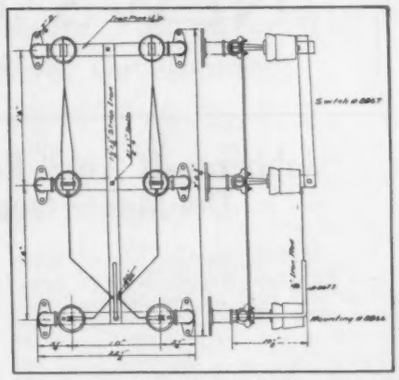


Fig. 6. One-line, wall-type telephone protector

or concrete building. In all cases the fuses and small arcing gaps are mounted inside of the protector box, which should be of ample dimensions, as shown in Fig. 7. This last is very important as when the fuse blows under a heavy current there must be ample room between the top of the fuse holder and the top of the box. If the space is insufficient, an arc will be started between the top of the fuse holders and the box then will be set on fire.

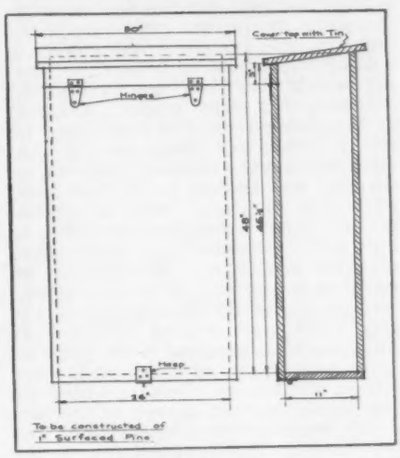


Fig. 7. Design details for fuse box for telephone protective apparatus

Editor's Note: This is part of the first of a series of articles by Mr. Kalb in which he outlines the special features of power company telephone systems and the protective equipment involved. The article will be continued in the next issue.

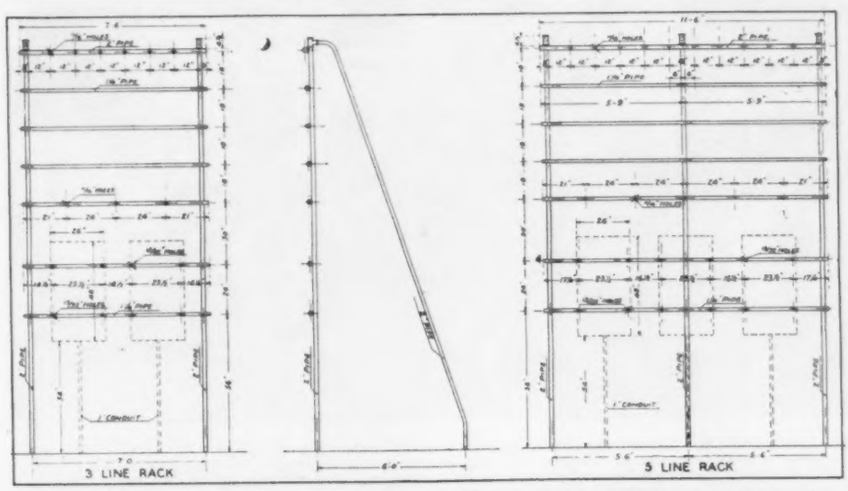


Fig. 5. Design details of three and five-line telephone protection racks for substations using pipe framework

The Cumberland Street Hospital of Brooklyn, N. Y., has a surgical electromagnet of sufficient strength to pull out a needle imbedded in a finger. It has to be watched carefully to keep it from attracting all the loose surgical instruments in the vicinity.

Wifey took off her hat and slammed it upon the floor and then she turned to her husband. "I'll never go to another party with you as long as I live."

"Why?"

"You asked Mrs. Chester how her husband was standing the heat and her husband has been dead for six months."

NEWS OF THE INDUSTRY

"Jobbers—If Any" Eclipses All Else at the Del Monte Quarterly Meeting

The quarterly meeting of the Pacific Coast Electrical Supply Jobbers' Association was held at Del Monte, Calif., Sept. 24-26. By an interesting coincidence it is just one year since a similar meeting was held at the same place and the main building of the Del Monte Hotel was destroyed completely by fire.

The closed sessions were called to order by O. B. Stubbs, president of the Association, with Albert Elliot acting as secretary.

On the evening of Friday, the 25th, the jobbers and their guests were treated to a real surprise by the manufacturers' group who, unknown to the industry, had succeeded not merely in writing but producing a play, or playlet, which they had been rehearsing diligently for many weeks. A corner of the dining room was partitioned off and a temporary stage erected. At nine o'clock the expectant audience assembled was treated to its first thrill when the programs were distributed by Ben Holst, whose function seems to have been a combination of ticket taker, program vendor and purveyor of ice water, to say nothing of his having been cast for one of the leading parts. The play itself was entitled "Jobbers—If Any" and was described in the program as a tragedy in one act and three scenes, written by Chance, edited by The Manufacturers, passed by the National Board of Fire Underwriters, and dedicated by The Manufacturers to the Indispensable Jobbers who, according to the program, "Can do no Wrong."

The cast and the musical program are worthy of repetition verbatim:

THE PLAYERS

In the order of their appearance.

Yukon Jake, Stock Man..Harry Garbutt
I. M. Lightnin, Pick-up Boy..Frank Beck
Bull Montana, Office Boy.....Sandy
Nina Knight, Stenographer.....Chubby
Pee W. Wiggely, Jobber.....Miles Steel
Day Later, Postman.....Garnett Young
Mike Gogett'em,
Contractor .....Garnett Young
J. Algernon Buttinsky,
Hebrew Salesman.....Ben Holst
Johnnie Walker,
Bootlegger.....Ray Murphy
Ford C. Dan, Chauffeur.....Tom Sawyer
R. Beresford Fox, World-
Wide Ambassador.....Bill Shreve
Scenery by No. 6 Local.
Costumes by Union Iron Works.
Millinery by Pacific Manufacturing Company.
Shoes by Salvation Army.
Cosmetics by Hercules Powder Company.
Music by Gin's Little Synthetic Orchestra.
Director.....Pete Bach
Photographer.....Eddie Himmel
Chief of Photography Staff of the R. Forrest Oakes Productions, Ink.
Look out for flying parts—"Let's Go."

MUSICAL PROGRAM

By

Gin's Little Synthetic Orchestra.

OVERTURE—
"Sad Music Befitting the Occasion."

SCENE 1—
"Laughing Song" from "Hyena."

SCENE 2—
"Yes, We Have No Bananas" from "Habit."

SCENE 3—
"Just Pickle My Bones" from "Bottle."

EXIT—
"Three Swallows" from "Johnnie Walker."

As to the play itself, it was full of subtleties, some delicate and some "hard-boiled," satire, wit, humor and pathos, the audience running the gamut of all the human emotions as the actors made their entry and after a struggle were identified beneath many examples of fearful and wonderful powers on the part of the make-up man.

The story itself depicted a jobbing establishment, which we hope is not too typical. The first action took place when a customer arrived seeking to acquire by fair means or foul five feet of conduit and one socket. Fortunately there was a piece of conduit in stock, and Yukon Jake, the stock man, essayed to perform a surgical operation on the piece of conduit with a super-dull hacksaw, while Lightnin, the pick-up boy, introduced certain inquiries concerning the customer's credit. The customer, proving to have no credit, waxed wrathy when his order was refused and proceeded to deliver a homily on the subject of service and the absence of stock in the jobbing emporium of Mr. Wiggely. Service was what Mike Gogett'em wanted and that was why he had been placing all of his business with a rival concern and paying their bills promptly. When Buttinsky, a salesman, importuned the enterprising jobber for business and waxed eloquent over the advantages of carrying sufficient stock,

When they were not sitting in on or acting in the "drammer," the jobbers were not slow at a favorite Scotch entertainment. As for the play, they were dressed for the part, as witness: 1. O. B. Stubbs, president, Stubbs Electric Company, Portland, and chairman, Pacific Coast Division, Electrical Supply Jobbers' Association; 2. H. L. Harper, manager, Western Electric Company, Los Angeles; 3. Ray W. Murphy, Pacific Coast manager, Westinghouse Lamp Company; 4. H. E. Sanderson, Pacific Coast manager, Bryant Electric Company; 5. Mrs. D. E. Harris, wife of the president of the Pacific States Electric Company; and 6. C. C. Hillis, president, Electric Appliance Company, all of San Francisco

he had a severe lesson from the proprietor on the subject of turn-over, after which he was ignominiously thrown out. However, witness the change in the reception of Johnny Walker, whose garb proclaimed the fact that he could be none other than a bootlegger, who had no difficulty whatever in persuading the jobber of the advantages of carrying a large stock of pre-war, aged-in-the-wood Scotch at $100 a case.

However, Mr. Wiggely eventually saw the error of his ways and, succumbing to the persuasions of his faithful staff, wrote to all the salesmen in town to call upon him at once and help to fill his empty shelves, with the understanding, of course, that Mr. Wiggely would regard with certain favor special privileges in the way of consigned stock. When Mr. Wiggely was turned down cold on the consigned stock idea and his discounts of eighty, two or three tens and several fives, winding up in a climax when the low-priced lamp offered by Mr. Buttinsky ignominiously failed under test, then the stage was set properly for the climax when Mr. R. Beresford Fox, who looked all of it, entered, preceded by his chauffeur and sample case, and with a distinguished air assured Mr. Wiggely that he had been accepted as a distributor for the World-Wide Electric Company, that he would be graciously permitted to carry all the stock for which he could pay cash and would be granted a special concession of 5 per cent off list. The play closed with Wiggely dictating a batch of letters to all of his distributors advising them of the great honor that had been done him by World-Wide and that now they would have an opportunity of tying in on national advertising so that their fortune was assured.

Truly this was an all-star aggregation, a remarkable amount of latent dramatic talent having been uncovered with the opportunity to turn Thespian afforded by this jobbers' meeting. In such an array it is difficult to discriminate, but a word must be said for Miss Knight, the stenographer—a part played in masterly fashion by F. A. Gerhardt. The meticulous observance of modern fashions in young women's apparel caused a great deal of comment, some of it being distinctly audible from quite a distance. In fact, this this rising young actor "outflapped" any flapper that has ever been seen upon the Pacific Coast. Like many other things, he, or she, should have been seen to be truly appreciated, but the finished arstistry of his performance, his deft manipulation of the powder puff and lip stick completely dwarfed into insignificance the few words of dialogue which a heartless author permitted him to utter.

The play was such a success that the golf tournament and the golf banquet, ordinarily the chief events of this gathering, lost their position in the limelight; nevertheless there was no lack of interest in the fact that P. H. Booth, Pacific Coast manager, Edison Electric Appliance Company, Los Angeles, won the famous copper cup; W. S. Berry, manager, Western Electric Co., San Francisco, the Deming trophy, and C. B. Hawley, vice-president and general manager, Intermountain Electric Company, Salt Lake City, the Turner trophy. The East Indian festivities that preceded the golf tournament were well attended and enthusiastically supported. Ten excellent judges of horseflesh profited greatly by their good standing with the little god of chance.

All in all, it was one of the most successful meetings ever held by the Jobbers' Association, the attendance being considerably above average.

Forty Years Power Needs for Vancouver Will Be Met by Bridge River Development

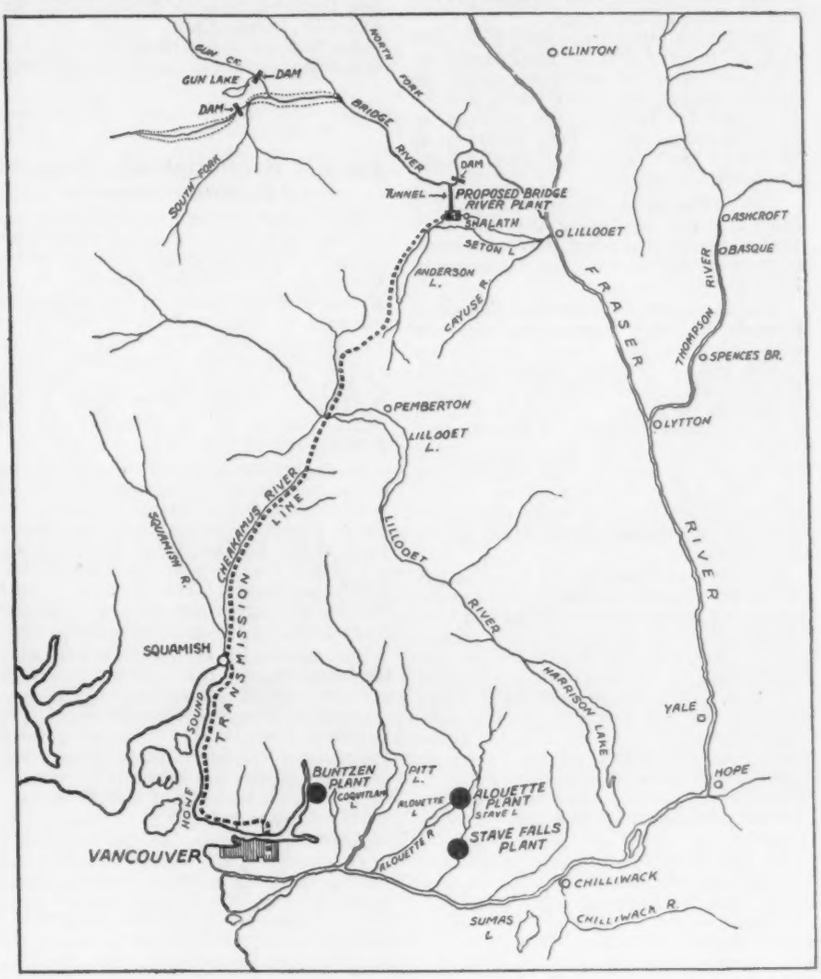
The Bridge River power development in British Columbia with a possible ultimate capacity of 550,000 kva., or approximately 700,000 hp., will be proceeded with by the British Columbia Electric Railway Company. (Journal of Electricity, Oct. 1, 1925, p. 26.) Announcement to this effect was made by George Kidd, president of that company at the opening of the enlarged Stave Falls plant on Sept. 19.

The proposed development is so great, being one of the largest hydroelectric projects in the world, that only the first stage, producing 157,500 kva., has been planned. There is believed to be power in Bridge River sufficient for the needs of Vancouver and the lower mainland of British Columbia for forty to fifty years.

Originally in the hands of W. R. Bonnycastle, consulting engineer, Vancouver, the Bridge River power rights latterly have been held by a Montreal syndicate, the majority of whose stock was held by the Royal Securities Corporation, H. H. Vaughan and Henry Holgate of Montreal. A year and a half ago the British Columbia Electric Railway Company obtained an option on the property and since then has been making extensive investigations and tests. The whole scheme has been reported upon extensively by J. D. Galloway, consulting engineer, San Francisco.

At the present rate of progress, additional power will be required for Vancouver and vicinity by 1930. If this rate is maintained construction must start in 1927.

The Bridge River project consists of diverting the river through a 2½-mile tunnel into Seton Lake, which is located 135 miles north of Vancouver. By a fortunate trick of nature, this river with an available flow of 3,500 sec.ft., has been brought within two and a half miles of Seton Lake, but at a point 1,200 ft. above it. So great is



Map showing the site of the proposed Bridge River power development to be undertaken by the British Columbia Electric Railway Company that is estimated to insure Vancouver an ample supply of power for the next forty years. The Stave Falls and Alouette plants of the company are shown in respect to the location of the Bridge River project and to Vancouver itself

the development, however, that heretofore it has not been economical to utilize it, owing to the heavy initial costs. It has remained for more favorable power sites closer to Vancouver to be developed first. The British Columbia Electric system is now large enough to absorb the initial stages of power production.

In the first program, which will produce 157,500 kva., there will be four stages. The first stage will develop 45,000 kva. at a cost of $13,271,000. This cost will include the tunnel, a diversion dam across Bridge River, the power house and two units of 22,500 kva. each and a dam at Gun Lake providing 50,000 acre-ft. of storage. The water of Gun Creek will be diverted by means of a flume and ditch into this lake. There will be a 135-mile wood pole transmission line, operating at 165,000 volts.

The second stage will consist of installing a third impulse wheel and generator, bringing the capacity up to 67,500 kva. At the present rate of progress, this will be required in 1933 and will bring the total cost up to $14,700,000.

The third stage will develop a total of 112,500 kva. in five units at a total cost of $28,000,000. At this stage a dam will be built at La Joie Falls, forming what is known as the upper basin and impounding 350,000 acre-ft. A second transmission line on steel towers will be built at this stage.

The fourth stage will develop 157,500 kva. at a total cost of $30,500,000 by the installation of two more units. In further stages the lower basin will be developed for bringing the storage up to 1,700,000 acre-ft. This, however, is so far in the future that details have not been worked out.

The power plant will operate under a head of 1,217 ft. during the first part of the scheme, and when the lower basin is created the head will be increased to 1,350 ft.

It is the plan of the British Columbia Electric Railway Company to proceed with the first two stages, developing 57,500 kva. at Bridge River by 1933. The next stage probably will take place at Ruskin on Stave River, where there is an available capacity of 90,000 kva. Of this 45,000 kva. can be developed for $8,000,000 as against $13,000,000 for the third stage at Bridge River. This will postpone the third stage at Bridge until this additional power from Stave is utilized.

The present capacity of the British Columbia Electric Railway Company's plants is approximately 453,000,000 kw-hr. annually. The output of these plants during 1924 was 300,000,000 kw-hr. At an increase of 10 per cent per annum this power will suffice only until 1930, allowing for the dropping of the Bellingham load next April with the completion of the Puget Sound Power & Light Company's Baker River plant. The Bridge River project will be capable of producing 2,700,000,000 kw-hr. a year.

Bridge River was chosen after extensive investigations of other power sites. Its development will dispose of the necessity of looking for further power for a generation. Plans are being drawn in detail by the company's consulting engineer, E. E. Carpenter. The power house will be located on the Pacific Great Eastern Railway.

Pacific Coast Industrial Lighting Organization and Meeting Schedule Announced

With a completed organization and a schedule of meeting dates fast shaping into form, the Industrial Lighting Activity for the Pacific Coast Geographic Division is getting under full head, according to A. M. Frost, sales manager, San Joaquin Light & Power Corporation, Pacific Coast geographic chairman. Only a few dates remain to be determined for the completion of the speaking program for the educational side of the activity.

The schedule, at last reports, had arranged for the following meetings:

Oakland—Oct. 5, H. H. Robinson, Pacific Gas and Electric Company, speaker.

Fresno—Oct. 14, Morris Hixon, Edison Lamp Works, speaker.

Bakersfield—Oct. 15, Morris Hixon, speaker.

San Jose—Oct. 17, Morris Hixon, speaker.

Stockton—Oct. 20, Robert Prussia, Westinghouse Lamp Company, speaker.

Meetings are to be held, according to the announced plans of G. M. Rankin, field representative of the California Electrical Bureau, and assistant to A M. Frost, at the following cities: Sacramento, Stockton, Oakland, San Jose, San Francisco, Fresno, Bakersfield, San Luis Obispo, Los Angeles, Riverside, San Bernardino, Long Beach, Santa Ana and San Diego, Calif.

Each of these meetings is to be of an educational nature, the speaker in each case to be a member of the educational committee. The program is intended for the instruction of central-station salesmen, jobber salesmen, contractors, and manufacturers' representatives, in the rudiments of industrial lighting practice so that they can go forth and sell better lighting in an intelligent manner.

A list of the vice-chairmen who will assist A. M. Frost in conducting the Industrial Lighting Activity in the Pacific Coast Geographic Division was published in the Journal of Electricity Sept. 15, p. 227.

Under the chairmanship of Clark Baker, National Lamp Works, the following men have been named on the educational committee to act as speakers for the educational meetings: D. Pence, Illinois Electric Company; C. O. Martin, Benjamin Electric Manufacturing Company; F. Van Gilluwe, C. W. Cole & Company; Robert Prussia, Westinghouse Lamp Company; C. A. Sanborn, Holmes & Sanborn; M. Hixon, Edison Lamp Works; T. F. McDonough, Benjamin Electric Manufacturing Company; H. C. Barnard, Curtis Lighting, Inc.; W. A. Alden, Westinghouse Electric & Manufacturing Company; H. H. Robinson, Pacific Gas and Electric Company, and L. Hobbs, Edwin Guth Company.

Feather River Holdings Acquired by Byllesby Interests

Extensive power holdings on the Middle Fork of the Feather River were acquired from the Feather River Power Company in a recent deal by H. M. Byllesby & Company, it was announced recently by officials of the Feather River Power Company. The deal, however, does not affect the $8,000,000 program of the Feather River Power Company for the construction of its Buck's Creek plant, located on a tributary to the North Fork of the Feather River.

It is understood that the Byllesby company will begin the construction of a 90,000-hp. hydroelectric plant on the Bean Creek tributary to the Middle Fork of the Feather River in the spring of 1926. Power will be transmitted from this plant to the Western States Gas & Electric Company at Stockton by means of a 165-kv. transmission line.

The Middle Fork Feather River holdings acquired by the Byllesby interests are reported to have been purchased from Karl Brehme, president of the Feather River Power Company, Lars Jorgensen, vice-president, and two members of the construction firm of R. C. Storrie & Company of San Francisco.

The Feather River Power Company's $8,000,000 power project on the North Fork tributary, at Buck's Creek, however, is to go on uninterrupted or unaffected by this deal. In the latter project, for the construction of a 60,000-hp. hydroelectric plant at Buck's Creek, the entire output has been contracted to the Great Western Power Company at 4 mills per kw-hr. for a period of thirty-five years, at the end of which time the plant will become the property of the Great Western Power Company in consideration of the price paid for the energy. (Journal of Electricity, Oct. 1, 1925, p. 265.) This plant is scheduled to go into operation about October, 1927.

A feature of the Buck's Creek plant of the Feather River Power Company is the plan to utilize a 2,580-ft. drop, claimed to be the highest in the world, exceeding by 100 feet that of the Balch plant of the San Joaquin Light & Power Corporation now under construction. (Journal of Electricity, April 1, 1925, p. 241.)

Grant Permit for Thurston County Development in Washington

Permits to appropriate 31 sec.ft. of water from springs in eastern Thurston County for use in connection with development of a $1,000,000 power, irrigation and domestic water supply project recently were issued J. C. Sams, 212 East Fifth Street, Olympia, by R. K. Tiffany, state supervisor of hydraulics.

The first permit covers appropriation of 25 sec. ft. of water from McAllister Springs. A pipe line 15 miles long is contemplated. Cost of this project is estimated at $750,000. The second permit is for 6 sec.ft. of water from Beatty Springs. A pipe line eight miles in length is proposed. Cost of this project is estimated at $250,000. Applications for both permits were filed by Sams June 24, 1925. Details of the pumping plant, reservoir and pipe line are to be furnished later. Construction must begin by July 1, 1926, and be completed by Jan. 1, 1928.

Irrigation District License Ends Long Controversy

A four-year controversy as to the rights for water and power development on the Yuba River in Nevada County, Calif., was settled by the Federal Power Commission recently in granting to the Nevada Irrigation District the rights to proceed with its plans for a 200,000-acre irrigation scheme. The Yuba River Power Company contested the application, as did the Excelsior Water & Power Company. The Excelsior Water & Power Company's claims had been disposed of previous to the license grant, due to purchase of the Excelsior system by the irrigation district. F. H. Tibbetts, chief engineer of the Nevada Irrigation District project, and A. L. Wisker, general manager, announced that work would start immediately on the first part of the development, to cost $2,000,000.

The district, which lies within Nevada County, adjacent to Grass Valley and Nevada City, has conducted a campaign for four years to obtain water and power rights on the Yuba River. The district has a contract to allow the Pacific Gas and Electric Company the use of the water for power-generation purposes between the dams of the district and the land to be irrigated. These arrangements were contested by the Yuba River Power Company, which claimed that more efficient use of the water could be obtained if the diversion of the water were to the North Yuba rather than the South Yuba, and through the plants of the Pacific Gas and Electric Company.

In its hearings the Federal Power Commission tried to determine whether or not the watershed of the Yuba River is an essential part of the irrigation district or if it is only something it would like to have to use to its advantage. It was apparent that the commission was not entirely convinced that the irrigation district would use the water for anything other than the generation of power. The irrigation district had to establish that the water is essential to a feasible irrigation project, with power development an incident to that use. As the matter stood for some time the commission was in doubt and felt that it must discharge the responsibility vested in it to approve only the most efficient use of water resources.

W. F. McClure, the chief of the Department of Public Works of California, appeared in behalf of the Nevada Irrigation District. He urged that the license be issued in view of the fact that state rights had been secured and a bond issue approved by the state authorities. The appearance of Mr. McClure in such a capacity was objected to strongly by the representatives of the Yuba River Power Company. They contended that it is improper for state authorities to participate in the case after they had passed upon priority in the matter of water rights and the ability of the applicants to guarantee their bonds.

Prof. C. F. Shaw, of the University of California, testified as to the argricultural value of the soil in the Nevada district. The Yuba company took issue with his findings and pointed out that previous attempts to conduct irrigation projects on these lands had been unsuccessful ventures.

Judge C. W. Slack appeared on behalf of the Yuba Consolidated Gold Mines and the irrigation interests on the lower Yuba. Those irrigators claimed that the issuance of a license to the Nevada Irrigation District would interfere with their water supply. With the representatives of the Yuba River Power Company he took the position that "the only question to determine is whether to give a license to a good power project or to a poor power project masquerading under a cloak of irrigation."

Spokane Women Meet to Organize Sectional Committee

That the women of the light and power industry can be of great assistance to the activities of the public relations department of the company; that they will benefit directly from this work through self-improvement, and that their participation at meetings of women throughout the territory will be a benefit both to the company and the community, were three important points stressed at the first meeting of the women's organization of The Washington Water Power Company, Spokane, Sept. 18, 1925. This organization was formed as a section of the Women's Committee of the Northwest Electric Light and Power Association, a subcommittee of the Public Relations Section. Members of the executive committee of the Spokane organization include: Mary K. Walsh, chairman; Mrs. Louise Bree, vice-chairman; Pauline Strom, Lettie Hedger, Ruth Coombes, Emma Marlowe, Ruth Roland, Mrs. J. B. Fisken and Mrs. C. V. Aspinwall.

The first meeting was addressed by Lewis A. Lewis, sales manager of the company, and president of the Northwest Electric Light and Power Association; by W. H. Ude, director of public relations of the company, and chairman of the Public Relations section of the association; and by J. E. E. Royer, assistant general manager of the company. A general discussion led by Miss Walsh followed.

A.I.E.E. San Francisco Section Meet.—The San Francisco Section, A.I.E.E., will hold its next regular meeting Oct. 30 at the new factory of the Pacific Electric Manufacturing Company at 5815 Third Street, San Francisco. The Section will be the guests of the company upon this occasion.

A.I.E.E., Vancouver, B. C., Section holds next regular meeting Nov. 3, 8:15 p.m., 913 Metropolitan Bldg., 837 Hastings Street, West. Subject, "Power Factor Correction." Speaker, R. L. Hall, Engineering Department, B. C. Electric Railway Company.

Pacific States Company Opens New Oakland Warehouse and Office.—Announcement of the opening of new offices and warehouse for the Pacific States Electric Company at Oakland was made recently by officers of that company. The new branch offices and warehouse are at 204 Ninth Street, Oakland, Calif. and were opened for business Sept. 8. "Enlarged quarters for our Oakland branch were made necessary by the unparalleled growth of Oakland and surrounding communities and in planning these new quarters the future requirements of East Bay customers have been anticipated," the official announcement states.

California Utility Issues Book on Farm Electrification

"Pioneers in Farm Electrification" is the title of a booklet recently prepared and published by the Pacific Gas and Electric Company, San Francisco, to show the progress made in electrifying the California farm and the part played by the company in that work.

Starting with what was probably the first agricultural installation in California, near Marysville in 1900, the booklet traces the early steps in the development, tells of experiments with electric pumping in irrigation districts, with the use of electric milking machines in dairies, with electric cooking and water heating on the farm and gives the basis of early rates and installation charges. It describes a demonstration car containing sample equipment for farm use shown in actual operation that was run in connection with a University of California farm extension train and used to spread the gospel of the possibilities of electricity on the farm.

The use of electricity in the poultry industry, in the dehydration of fruit and vegetables, and in the heating of green houses are other phases touched upon, and reference is made to the experiments being carried on in connection with the dehydration of walnuts, in orchard spraying and in heating orchards during frost conditions, in all of which the power company has been an active cooperating factor. Other subjects treated include reclamation by electric pumping, the present use of electricity on the farm, low cost to the farmer, the research work planned under the supervision of the California Committe on the Relation of Electricity to Agriculture, in which the power company is taking an active part, and the company's advisory service.

The booklet is very fully illustrated. The inside front cover contains a tabulation of salient facts about California farms, and the inside back cover data for figuring the horsepower required by centrifugal pumps.

Senate Committee on Public Lands to Hold Hearing on Colorado River.—Various questions relative to the development of the Colorado River are expected to be discussed before the Senate committee on public lands, which is to hold a hearing on the subject in Los Angeles Oct. 26, 1925. Facts brought out at the hearing will be presented by the committee at the next session of Congress.

Payson, Utah, Lets Street-Lighting Contract.—Contract for the installation of the new whiteway lighting system in Payson, Utah, has been awarded to Frank Coombs, Salt Lake City electrician. Work will be begun immediately.

Want Underground Conduit for Street Lights and Services in Pasadena District.—Petition for the organization of a district for the improvement of Walnut Street between North Lake Avenue and North Fair Oaks Avenue, Pasadena, was referred recently by the board of city directors to R. V. Orbison, city manager. The petitioners ask that a concrete pavement be installed, culverts put in, and conduits provided for underground service through conduits and for an ornamental lighting system.

News of the Electragists

Inspectors Discuss Standardization and Uniform Interpretation of Rules

Standardization of rules covering safe electrical installations and their uniform interpretation was the keynote of the discussions before the fourth semi-annual convention of the California Association of Electrical Inspectors which was held in Fresno, Sept. 24-26. Grounding of portable appliances, construction and installation of electric signs, uniform electrical ordinances, and the National Electrical Code also were considered during the sessions, which were held in the San Joaquin Power Building. R. W. Abright of Long Beach presided over the convention, which was attended by forty-five persons representing nineteen different municipalities.

Inspection in suburban districts was one of the first subjects brought before the convention. Progress on this subject was reported by several of the delegates.

Grounding of portable appliances was discussed at considerable length, various methods and ideas being presented, including the placing of a ground lug upon the device and the use of 3-wire portable cord with a polarized plug connected to ground. Most of the members were of the opinion that effective grounding of portable appliances was highly desirable but felt that most of the remedies suggested were impractical. It was suggested that a suitable plug and receptacle should be attached to these devices by the manufacturer; this would enable contractors and inspectors to impress more favorably upon the owner the necessity for that kind of plug. It generally was felt that education of the public to the hazards that arise in improperly grounded installations would do a great deal to remedy the situation.

R. J. Larrabee of the Underwriters' Laboratories explained the methods of identification of cables approved by them. President Abright urged the members to insist on the use of materials and appliances which are approved by the Underwriters' Laboratories.

President R. W. Abright, from Long Beach

A committee to act in an advisory capacity to the framers of the National Electrical Code was appointed from the Association. This committee will receive and edit suggested rules to be incorporated in the Code and will forward them to the electrical committee of the National Fire Protection Association. Anyone may send suggestions to this committee, which is made up of the following members: F. Morrell, Stockton, northern division; H. W. Stitt, Fresno, central division; and R. W. Abright, Long Beach, southern division.

Proper construction and installation of electric signs were discussed at considerable length. It was found that many cities were requiring that the provisions of the National Electrical Code and the Safety Orders of the Industrial Accident Commission be adhered to, despite many rumors to the contrary. It was the unanimous opinion of the delegates that all cities should enforce the requirements of the Code and the Safety Orders on all sign installations.

George Kimball, Industrial Accident Commission, San Francisco; H. W. Stitt, Fresno, past president

The tentative regulations of the Board of Fire Underwriters of the Pacific relative to electrical equipment and wiring of theaters and motion picture establishments were presented to the members for their suggestions and approval. These were outlined by J. M. Evans of the Underwriters.

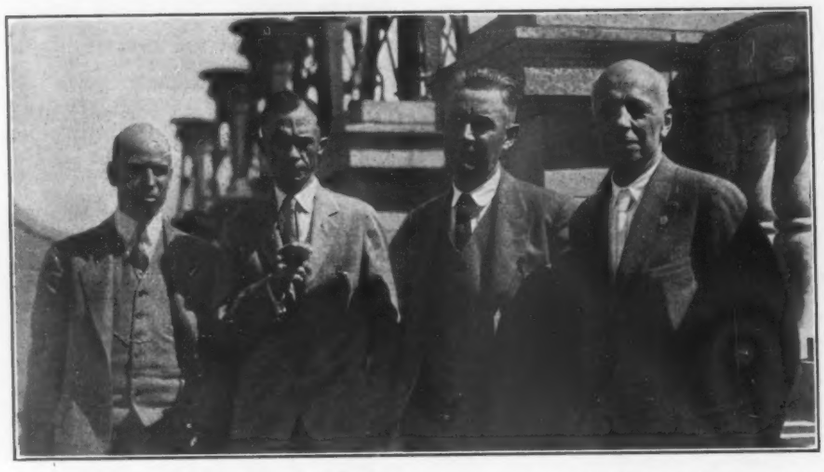
The Red Seal Plan of adequate wiring was outlined by Victor W. Hartley, executive secretary of the California Electrical Bureau, and copies of the Red Seal specifications were given to the members who manifested a keen interest in the subject.

The work of the California Electragists was presented by George Eldridge, field man for the northern division of that organization. He assured the inspectors of the co-operation of the Electragists in their work.

The question of making the meetings of the Association annual instead of semi-annual was discussed. This will be decided at the next meeting of the organization, which will be held in San Diego in March.

Uniform Ordinance Considered

President Abright introduced the subject of a uniform ordinance for all cities and urged that steps be taken to bring this about. Carl Beaton of Sacramento suggested that the National Electrical Code and the State Safety Orders be the basis of this ordinance with only a few additions to meet unusual local conditions. After considerable discussion from the floor it was decided that a committee should be appointed to work on the problem of standardization of local ordinances. This committee is to draft an ordinance which will embody necessary addenda to the National Electrical Code and Safety Orders for local adoption. In order that the members of the committee may be able to meet it was divided into a group from the north and one from the south. The northern division will be headed by B. C. Hill, Oakland; K. J. Bickel, Martinez; and W. Scott, Burlingame. H. N. Beecher, Los Angeles, is chairman of the southern committee; G. N. Fording, Anaheim; and R. W. Abright, Long Beach.



Northern and southern California declare a truce! From left to right—Ralph Wiley, San Francisco; R. H. Manahan, Los Angeles; B. C. Hill, Oakland; and H. N. Beecher, Los Angeles.

Trade Policy Important Topic at A.E.I. Convention

The trade policy of the association, the National Electrical Code, and estimating were three of the most important subjects brought up for discussion at the twenty-fifth annual convention of the Association of Electragists International, which was held at West Baden Springs Hotel, West Baden, Ind., Sept. 22-26.

The opening address of the convention was given by Joseph A. Fowler, president, Association of Electragists, International, who outlined the progress which had been made during the last year in telling the trade policy of the Association to various national organizations in the industry.

"The Strategic Position and Duties of the Electragists," was the subject of an address by Hon. J. H. Trumbull, Governor of Connecticut, president of The Trumbull Electric Manufacturing Company, Plainville, Conn., and formerly an electrical contractor.

O. Fred Rost, president, Newark Electrical Supply Company, Newark, N. J., gave an address on the Electragist's trade policy in practice.

The trade policy committee's report was given at an executive session of electragists only. This report was one of the most constructive presented at the convention.

A. Penn Denton, chairman of the code committee, gave its report at a conference of local code committees.

"Moral Responsibility of Electrical Dealers to the Public," was the subject of an address by Martin L. Pierce, director of research, The Hoover Company, North Canton, Ohio.

William S. Boyd, secretary and treasurer of the Western Association of Electrical Inspectors, Chicago, delivered an address on the electrical inspector and outlined the work of that association.

One of the features of the technical session under Arthur L. Abbott, technical director, A. E. I., was a demonstration given by C. J. Geisbush, executive secretary of the Southern Division of the California Electragists, in which he showed those present how proper scientific estimating was sold to the Electragists in southern California. This was received very enthusiastically by the meeting.

The manufacturers' exhibit was one of the most complete ones that ever has been provided, forty-four electrical manufacturers being represented. They already have decided to exhibit again next year at the convention which will be held at the West Baden Springs Hotel.

Four certificates of honorable mention under the James H. McGraw award were presented by Earl E. Whitehorne, commercial editor of Electrical World, to A. Penn Denton of Kansas City, Robert A. Goeler of New York, Walter H. Taverner of New York, and William J. Ball of Moline, Ill., in recognition of services rendered to the electrical contractor-dealer group of the industry.

Molner Brothers have opened a new electric store at 5114 York Boulevard, Los Angeles, under that name and will stock a complete line of appliances in addition to conducting general electrical contracting. **A. D.** and **S. Molner** are the owners.

Chico Electric Supply Company, Chico, Calif., recently have become affiliated with the California Electragists.

Ernest Smith's Electric Store recently moved into a more convenient location at 107 West Broadway, Hawthorne, Calif.

McLellan Electrical Shop and **Reinharts Electric,** both of Ferndale, Calif., recently have become members of the California Electragists.

J. H. Hilfiker, electragist of Eureka, Calif., was a recent visitor in San Francisco. He is one of the owners of the Eureka Electric Company.

H. W. Collins has opened The Service Electric Company at 3222 E. Broadway, Long Beach. He formerly was at 235 Grand Avenue in that city.

The Commercial Electric Company, electragists of Oakland, Calif., recently moved from 498 Twenty-first Street to 5934 San Pablo Avenue in that city.

G. W. Nelson recently has opened a new electrical contracting establishment in Lancaster, Calif. Mr. Nelson was formerly in the illuminated sign department of Foster & Kleiser Company, Los Angeles.

The Albert Sechrist Manufacturing Company of Denver, Colo., has been awarded the contract for lighting fixtures in the new $2,000,000 East High School in that city.

The Keystone Electric Company has moved into a new location at 1650 West Washington Street, Los Angeles. **L. A. Walterwest,** the proprietor, specializes in electrical contracting.

Arthur P. Peterson, field representative of the **Association of Electragists, International,** was a recent visitor in Salt Lake City, where he addressed a meeting of contractors and dealers.

Henry Laurdeaux recently purchased Ye Electric Shop at Sonoma and is operating it under the name of the Sonoma Electric Shop. Mr. Laurdeaux formerly was located in San Francisco.

K. S. Scott has opened a store at the corner of 8th and F. Street, San Diego, under the name of the Scott Electric Company. He will have a fixture, motor and appliance, and engineering department.

Walter L. Paine, Santa Cruz electragist, recently completed the electrical installation in the Session Building in that city that will house a business college, apartments, garage, stores and a dance hall.

The Wade Electric Company, 121½ South Pacific Avenue, Redondo Beach, Calif., is now owned and operated by **H. C. Wade.** Mr. Wade was formerly a partner of **B. Moore** in the **M & W Electric Company.**

L. C. Miller, formerly manager of the Apex-Rotarex department of the Illinois Electric Company, Los Angeles, has resigned to enter business for himself. He is featuring the display of Apex and Rotare appliances.

Philip Mayer and **W. G. Boyce,** of San Diego, recently have moved into new and enlarged quarters. Formerly known as the Philip Mayer Company, this firm of electragists now will be operated as **Mayer and Boyce.**

E. G. Osterhoudt, radio electrician, and **V. E. Harvlie,** electrical contractor, recently have opened a joint store at 1522 East Manchester Avenue, Los Angeles, under the name of the **Manchester Radio Electric Shop.** They formerly operated a store at 1909 East Nadeau Street.

H. F. Hart recently opened the **Sunset Radio and Electric Company** at 637 Irving Street, San Francisco.

The Old San Francisco Electric Company has moved into a new store at 635 38th Avenue. The concern was formerly at 1145 Lake Street, San Francisco.

The American Automatic Appliance Company has been granted a contractor's license in Denver. **McDonald** and **Solomon** are the proprietors of the new firm, which has headquarters at 2351 Fairfax Street.

J. M. Evans recently resigned his position as city electrician of Modesto, to become affiliated with the Department of Public Works, Division of Architecture of the State of California. His headquarters will be in Sacramento.

Carl Lagerfelt recently opened an electric store in the West Coast Theater Building, Los Angeles, under the firm name of the Standard Electric Service Company. Mr. Lagerfelt has embodied a number of modern features of stock display and arrangement.

The Graveline Electric Company, formerly of Englewood, Colo., and more recently associated with the Electric Supply & Construction Company of Denver, is now operating as an independent contracting firm in Denver at 919 East Alameda Avenue.

E. C. Headrick, mountain division committeeman, **Charles N. Shannon,** also a prominent electragist, and **B. C. Watts,** a jobber, made up the Denver contingent at the annual convention of the Association of Electragists, International, at West Baden, Ind.

T. A. Alexander has purchased the interest of **R. A. Parsons,** and is now the sole proprietor of R. A. Parsons & Company of Porterville, Calif. Mr. Alexander will continue to operate under the same firm name and at the same location, 524 Main Street, Porterville.

James C. Kerr, of the **Electric Supply, Company,** Manteca, Calif., has moved to a new location next to the offices of the Pacific Gas and Electric Company. He has a much larger store with good windows, and a large well lighted shop where he will continue to conduct his rewinding and repair business.

R. S. Willoughby, prominent electrical contractor of Denver, Colo., recently has established a jobbing house in that city and also has announced himself as the owner of the Wesco Company. Mr. Willoughby has engaged **W. W. McFarland,** formerly of Denver, although more recently engaged in the electrical business in California, as manager of the agency.

G. A. Sechler, contractor-dealer of Denver, Colo., recently purchased the stock of the **Poindexter Electric Supply Company** of that city, which was sold on a court order following the recent death of Mr. Pointdexter. Mr. Sechler was the highest bidder for the stock. It is understood that a retail business will be conducted from the old location at 1625 Tremont Street.

Goodknight & McFarland, operators of an auto service station, battery shop and tire department, now have added a complete line of electrical appliances and supplies. They will conduct a regular electrical contracting and supply store. To permit greater display space they have leased the store adjoining the present one and will occupy 3942 and 3940 S. Western Avenue.

Pacific Coast Electrical Association

Technical Section Holds Initial Meeting of Fiscal Year in Los Angeles

Off to a flying start on the work of the present fiscal year, the Technical Section of the Pacific Coast Electrical Association held its first conclave of the year in the Los Angeles Gas & Electric Company's new building in Los Angeles, Sept. 23-25. With at least 90 per cent of the organization work already completed, all of the committees were able to make progress reports at this meeting and only a minimum amount of time was given over to perfecting the organization of committeees and subcommittees. This desirable and pleasingly healthy state of affairs as exhibited at this, the first series of meetings of the year, foretells an immensely productive year for the Technical Section.

In addition to the technical sessions there were three special meetings. The first of these was the meeting of the executive committee held the evening of the first day. At this meeting each committee chairman outlined the completed and proposed work of his committee. In this way all were advised of the work undertaken or to be undertaken by the other committees. This interchange of information made possible the formation of joint subcommittees for the study of subjects in which more than one committee was interested. Routine business matters of the section also were attended to. Chief of these was the acceptance of the report of the overhead systems committee of last year covering the suggested revisions of General Order 64 of the California Railroad Commission. This report was ordered passed on through the proper channels to the commission as the official suggestions of the Technical Section.

The second of these special meetings was a luncheon meeting held at noon the second day.

This meeting was attended by all of the delegates to the meetings as well as by others interested in the work. Each committee chairman thoroughly outlined the work, present and proposed, of his committee, thus giving everyone an idea of the whole scope of the subjects under consideration by the various committees. In addition to this Professor Sorensen of California Institute of Technology gave an interesting discourse into which he wove something of a review of the recent A.I.E.E. convention and a discussion of some of the work under way at his institution.

The third special meeting was that of the executive committee held the evening of the third day. At this meeting the finishing touches were added to the activities of the conclave and the way paved for the January meeting to be held in San Francisco. Vice-chairmen were selected for each of the committees, and these will be announced through the Journal of Electricity as soon as the appointments have been confirmed.

A summary of the activities of the committees at the Los Angeles meetings is given in the following paragraphs. In this, no attempt has been made to cover fully all of the work of the committees, but rather to give a comprehensive idea of the scope and importance of this work as well as of the progress made.

Electrical Apparatus Committee

J. C. GAYLORD, Chairman
G. A. FLEMING, Secretary
Southern California Edison Company, Los Angeles

Topics as laid out for study and discussion at the three meetings of the year are as follows:

1. Pacific Coast Practice in Transmission and Distribution Substations. This is the major subject.
2. Tests of Station Grounds.
3. Oil Circuit Breakers.
4. Transformer Voltages.
5. Relays and Relay Applications.
6. Lightning Arresters.
7. Right Tension Fuses.

The meetings were of unusual interest, and over one hundred members and visitors registered.

Design features of new substations in San Francisco, Los Angeles and San Diego were described ably in talks by S. J. Lisberger, K. B. Ayres, H. L. Sampson and G. A. Fleming. Two of these were illustrated by lantern slides. The papers showed the wide divergence in the types of stations needed for city and rural srvice and the necessity of considering the type of load and its possible increase when designing new stations.

Architectural features and the abatement of noises from city stations are receiving a great deal of attention. A simple, cheap and easily rebuilt station is necessary for a rapidly growing rural service. The Southern California Edison Company has standardized upon several small stations for rural use. The smallest was described, and the method of handling the design and construction on a ready-cut basis shown.

Discussion on station electrical grounds brought out the necessity of good contact for rods or plates that are expected to provide a ground. Tests made by E. R. Stauffacher and N. B. Hinson of the Southern California Edison Company and H. N. Kalb of the San Joaquin Light & Power Corporation indicate that the ground resistance from a broken live wire to the substation is likely to be quite high. It varies with the resistance of the earth on which the wire lies, and on 4-kv. grounded star systems usually is too high to give enough current to operate an overload relay.

The use of transformer oil in oil circuit breakers was discussed and the fact brought out that it often is used indiscriminately with switch oil in the lower-voltage classes. One of the large manufacturers apparently sanctions the practice, while another condemns it.

Reports on the operation of oil circuit breakers under operating conditions were made by R. C. Denny of the San Joaquin Light & Power Corporation and E. R. Stauffacher of the Southern California Edison Company.

A great deal of interest was shown in recent developments in relay connections involving under-voltage features as well as overload. C. E. Schnell of the San Joaquin Light & Power Corporation read a paper on the subject, and E. R. Stauffacher described the application of voltage relays to the Southern California Edison Company's system to separate it into self-sustaining units in times of trouble.

Accident Prevention Committee

J. M. BUSWELL, Chairman
San Joaquin Light & Power Corporation, Fresno

In discussing the subject of safe practices and their enforcement among those engaged in electrical work it was suggested that there should be severe penalty such as a lay-off or actual discharge for workmen or foremen who violate safety rules. Attention was called to the fact that some companies have given much thought to safe line work but little consideration to work inside of stations. Arising from a discussion of this subject were several good suggestions regarding safe practices. Definite requirements for the procedure of obtaining clearance in order to do work on electrical apparatus in stations were recommended. Also it was recommended that permanent grounding points be supplied in stations so as to eliminate the hazard attending the application of grounding cables indiscriminately on any handy metal. A need was expressed for some instrument or method or device for testing the potential on a conductor before applying grounding cable. Certain definite recommendations were made regarding the testing of underground cables to ascertain whether energized or not, prior to doing work on them. For overhead work it was suggested either that a railing be provided on platforms or that safety belts and straps be required absolutely of the workers. That all men working in close proximity to, as well as around, any high-voltage conductor or equipment must in all cases be accompanied by another first-class man, was suggested as a desirable rule. Also it was thought that all engineers and purchasing departments should include in specifications for machinery and equipment provisions that proper derricks and safety appliances be provided.

A tool or some testing device for ascertaining the potential on a conductor or piece of equipment before grounding it was considered essential. Considering the danger incident to the use of gasoline blow torches and blow pipes, these have been displaced largely by the use of acetylene torches and small hand-operated torches. As regards the subject of accident statistics, it was pointed out that a complete statistical record would enable the general accident prevention committee and the department particularly responsible for accident prevention and safety instructions to watch the company's experience and

concentrate efforts on those places where accidents are noted in larger numbers. The particular points of such a study are: Types of accidents classified as to cause; character of injury; method of protection; and department or district in which accident occurred. The posting of bulletins containing accident statistics would do much to engender public interest in accident prevention. A comprehensive report upon this subject was requested by the committee. Educational work is regarded rightfully as one of the most important features in satisfactory accident prevention, and much discussion centered around this point. The use of safety instructors by the various companies was considered as an essential step in the safety-first program, and further it was decided to be desirable that these instructors should be capable men from the ranks who would be in a position to know how best to place the program before their constituents. Perhaps one of the most important features of the committee's contemplated activities is the preparation of a uniform and rather extensive safety code from which various member companies could draw the material for the safety codes they wish to provide for their own employees. It was agreed that it was highly desirable that each company should have such a safety code. Further, it was suggested that penalties should be imposed for the violation of provisions of these safety codes. Other subjects to which the committee gave consideration were: Apparatus and Devices, Safety Bulletins, Lighting, and The Foreman.

Hydraulic Power Committee

WALTER DREYER, Chairman
Pacific Gas and Electric Company, San Francisco

Evaporation and percolation losses in storage reservoirs was the first and one of the most important subjects considered by this committee. Study of this subject is being conducted by M. W. Cummings of the California Institute of Technology. It is Mr. Cummings' theory that water is evaporated from reservoirs due to the energy available to evaporate without regard to humidity and atmospheric conditions. The principal source of energy is the sun, but other possible sources are the wind, the earth itself and others of questionable value. The largest problem in this investigation is that of determining the magnitude of these various sources of evaporating power. A special instrument for this purpose has been purchased by the P.C.E.A. for Mr. Cummings' use and soon will be in operation. Some definite data on the subject are expected by some time next spring.

Penstock expansion joint design aroused much discussion. Details regarding the latest practice of several power companies, as well as information from manufacturers, are to be gathered by the subcommittee on this subject. Information regarding the various practices of penstock painting is to be gathered together and forwarded to national subcommittee No. 10 along with information on expansion joints.

Silt deposits and vegetal growth in conduits are two subjects that are also under consideration, and concerning which information is being gathered. A study of specifications for welded and seamless pipe is to be made, and definite information on this subject is expected to be available for the January meeting.

Another vitally important subject is the effect of speed regulation and water hammer on the design of relief valves, surge chambers and penstocks. This subject elicited much discussion on the part of those in attendance at the meeting. Various possible methods of measuring hydraulic stresses were discussed. Definite studies along this line are to be pursued during the coming year, and it is hoped that some valuable information will be forthcoming. Last year's subject on mechanical reliability of hydroelectric units will be continued during this year by the committee and a report submitted on the operation of hydroelectric units for the year 1924. This is done primarily because of the expressed interest of the national hydraulic power committee.

Inductive Co-ordination Committee

H. N. KALB, Chairman
San Joaquin Light & Power Corporation, Fresno

The program of this committee for the coming year was outlined. This will consist of routine telephone coordination problems, co-operation with the national committee in gathering data on existing and new parallels, and continuation of work on the radio interference problem. After some discussion and later action by the executive committee, the subject of power company communication was added to the list for study.

Under radio interference, data will be gathered on equipment and methods used in detection, educational publicity will be fostered, and classification of radio troubles will be done in co-operation with the national committee.

During the remainder of the Association year all data possible will be secured on the following phases of the power company communication problem:

1. Carrier current (a) on high-tension wires and (b) on present telephone circuits.
2. Space radio on various wave lengths for (a) telegraph and (b) telephone.
3. Protection of wire telephone lines carried on power line poles.

J. O. Binney reported on the N.E.L.A. form, a number of parallels of the Southern California Edison Company lines with those of communication companies. Three of these were rather short to be called parallels under General Order No. 52. Discussion was directed particularly against the placing of a complete barrel in a 900-ft. exposure of a 60-kv. line with a telegraph line at 50-ft. separation.

The 40-mile parallel between the 30-kv. line of the San Joaquin Light & Power Corporation and the toll lines of the Pacific Telephone & Telegraph Company from Kittridge to Yosemite Valley was described by Mr. Kalb. Tests made early in the year indicated (1) that a 150-kva. star-delta transformer bank which replaced a 75-kva. bank of the same kind did not reduce materially the noise on the telephone line; (2) that an open delta bank at the government power house connected to the line was a bad offender; (3) that the telephone line was most free from noise when the neutral was isolated from ground and the delta bank was disconnected. Certain recommendations had been made for the betterment of the communication service based on the results of these tests which, incidentally, formed part of the work of the Pacific Coast associate group of project committee No. 3 of the joint general committee between the N.E.L.A. and the Bell system.

Radio interference was discussed both in its technical phases and from the public relations standpoint. Nearly all companies are using the super-heterodyne with loop for locating sources of interference. The Southern California Edison Company's set and procedure were described by Mr. Binney. The value of the audibility meter was questioned in the ensuing discussion, as it was thought quite good results can be obtained without it by keeping the amplification down to a minimum.

The methods of handling complaints were described showing that the various companies now have definite plans of procedure.

The importance of publicity was stressed, and it was thought that short articles should appear from time to time bringing out the facts that power companies do not cause all the interference and that they are working actively on their part of the problem.

At the January meeting it is expected that comprehensive information on the new subject of company communication, as well as the other activities of the committee, will be presented.

Meter Committee

R. G. JONES, Chairman
The Southern Sierras Power Company, Riverside

Difficulties arising over the attempts to establish short educational courses for metermen during the year 1925 caused much discussion. It was planned to conduct these courses with the cooperation of the Extension Division of the University of California. However, the lack of appropriation for the work of that organization forestalled the carrying on of this work during this past year. Information was submitted to the committee that the University of Arizona conducts these meter short courses directly under the supervision of the Electrical Engineering Department. After lengthy discussion a special committee was appointed to investigate fully all details relative to the establishment of these meter instructional courses and to render a report at the earliest opportunity. Further investigations are to be made into the subject of meter test periods. Safety rules and test facilities are to be studied further. On the subject of the use of oil in meter bearings, manufacturers are making further investigations and results will be awaited by the committee. A recent report on the subject of maintenance of relays indicates the necessity of continuing the subject, and hence further study will be given. Investigations are being carried on by the Southern California Edison Company regarding the use of certain special current transformers in connection with high-tension metering, and data will be available at an early date. New developments pertaining to meters and metering methods will be followed.

Other subjects touched upon and discussed during the meetings of the meter committee were: Three-Wire versus Two-Wire Meters; the Possible Demand for 6-Terminal 3-Wire Meters; Methods of Placing Numbers on Glass Meter Covers; Temperature Corrections for Standard Test Meters; the Relative Applicability of 5, 7½ and 10-Ampere Watthour Meters; and Inspection and Tests on New Installations.

Overhead Systems Committee

G. A. RILEY, Chairman
Los Angeles Gas and Electric Corporation

Six major subjects are to be considered by this committee during the coming year. These subjects are Distribution Transformer Standardization, Bare Wire for Distribution Lines, Testing High-Voltage Insulators in Service, Revision of Construction Rules and Joint Pole Work, Line Construction Costs, and Grounding Primary and Secondary Lines. For each of these subjects a subcommittee has been appointed. The subcommittee on grounding will work in conjunction with subcommittees on this subject, working under the apparatus committee and the safety rules committee. This particlular subcommittee really is part of a joint subcommittee.

One of the most important features of the work of the overhead systems committe during last year was the revision of General Order No. 64 of the Railroad Commission, that was worked out by J. E. Macdonald and his large subcommittee. A report covering seven sections as revised was submitted to and accepted by the overhead systems committee to be forwarded through the proper channels to the railroad commission as embodying the suggestions of this committee covering proposed changes in the order. R. O. Waltham of the railroad commission stated that the Commission was anxious to have these suggestions as soon as possible in order to facilitate its completion of the revision of these rules. It is expected that this work will be completed by the commission by the first of the year.

The matter of standardization of hanger irons for distribution transformers was brought up again. Also some discussion and divergence of opinion arose over the question of standardiztion of the ratings of fuses. There was much discussion as to whether a fuse should carry a certain rated current or should blow at a certain rated current. The difficulties of using fuse and relay combinations on distribution systems and other systems were discussed. The consensus of opinion seemed to be that a study of the subject should be made and all possible information tabulated in order that intelligent recommendations might be formulated. A joint subcommittee will review this subject, the apparatus committee also being interested. Line construction costs, bare wire for distribution lines, and the grounding of primary and secondary lines all received their share of consideration and are important items in this year's work for these various subcommittees. A good many companies already are using bare wire for both primary and secondary distribution, particularly in rural districts where they find that the construction work is thus much cheaper than with insulated wire. The question of the advisability and necessity or possible necessity of adequate grounding at consumers' premises and other places brought forth the appointment of this subcommittee.

Prime Movers Committee

J. W. ANDREE, Chairman
Southern California Edison Co., Los Angeles

The subjects for study during the coming year for which the committee already has been organized into subcommittees are as follows: Burning of Liquid and Gaseous Fuel, Condensers, Cooling Towers, and Spray Ponds, Stand-by Plant Design, Heat Balance, and Station Auxiliaries.

Progress reports were made by each subcommittee chairman and a number of interesting points brought up for discussion. Furnace pulsation and various methods of overcoming this evil were discussed. The important operating features which must be considered in the design of stand-by steam plants brought discussion from several well qualified members. Important studies relative to methods of prolonging the life of condensers and the direct effect of condenser life upon plant economy are under way by this subcommittee. A discussion of steam vs. motor drive for generating station auxiliaries arose, and the suggestion was made that a tabulation of operating data and cost of each type would be of value.

In close association with the work of the subcommittee on station auxiliaries is the work of the subcommittee on heat balance. It is possible that these two subcommittees will submit a joint report. An interesting discussion on the heat balance system to be employed with the new 50,000-kw. unit to be installed in the Long Beach steam plant of the Southern California Edison Company was given.

Safety Rules Committee

W. R. FRAMPTON, Chairman
Southern California Edison Company, Los Angeles

There was much discussion concering the possibility of discontinuing this committee, due to the fact that the electrical safety orders of the Industrial Accident Commission of California now are in print and the work for which the committee primarily was organized now is completed. Under the contention that the completion of the electrical safety orders really was the beginning of the work of the safety rules committee rather than the end of it, all members present voted to continued the activities of the committee indefinitely. It was believed that the study and cooperation of the committee would be necessary to further the full application of these safety orders. Several different possible subjects for study were suggested. Co-operation between the P.C.E.A. and the Electrical Inspectors' Association was suggested to the end that the meetings of these two organizations not be held at the same time. Heretofore these two meetings often have been held at the same time thus making it impossible for those interested in the work of the two organizations to attend the meetings of both. Discussion of the Uniform Electrical Ordinance as recommended by the law department of the Electrical Manufacturers' Council brought about a vote recommending its approval for universal use in incorporated cities. Also it was thought that the application of this ordinance should be extended to cover other than city territory where possible. The chairman recommended that an effort be made to obtain representatives from as many electric service companies as possible to assist in the work of the Electrical Inspectors' Association.

The question of the grounding of consumers' installations is a subject which will be considered jointly by the overhead systems committee, the apparatus committee and the safety rules committee. To this end a joint subcommittee will study the question. Meter-testing facilities being another subject of interest and importance, a subcommittee was appointed to compile a list of various methods that would be acceptable to the different companies. This was done with a view toward filing with the railroad commission service rules suggestions covering these devices.

Underground Systems Committee

P. E. CHAPMAN, Chairman
Pacific Gas and Electric Company, San Francisco

Activities are under way in the study of all six of the major subjects which this committee is to consider during this year. These subjects are: "Improved Design in Outdoor and Indoor Cable Terminals," Study of Kenotron Testing Set," "Metal Conduits as Used for Underground Laterals," "High-Voltage Underground Cables," "Cement Duct," and "Junction Boxes."

The installation of submarine cable crossing in the Napa Creek at Napa, Calif., by the Great Western Power Company was described in a paper presented by G. H. Hagar of that company. This installation is particularly interesting as it is the highest operating voltage on any submarine cable installation on the Pacific Coast of which there is any record at present. The design and installation of the 44-kv., three-conductor outdoor terminal departs from the usual practice in that most installations of this type are of three single potheads instead of one three-conductor pothead. The use of the Kenotron for the testing of high-voltage cable is applied by the Bureau of Power and Light, Los Angeles, was reported upon interestingly and instructively by C. H. Jenkins of that organization. The Kenotron is coming more and more into favor as a means of testing underground lead-covered cable. The 33-kv., three-conductor lead-covered cable installation now in use in Los Angeles was described by M. O. Bolser of the Power Bureau. A paper on high-voltage cables and suggested changes in the N.E.L.A. cable specifications as presented by G. L. Hill invoked considerable discussion.

Cement duct, its manufacture and installation, was covered completely in a report read before the meeting by H. H. Buell of the Pacific Gas and Electric Company, San Jose. Cement duct has been used in the East for some time, but it is only recently that any installations of size have been completed on the Coast. The purpose of cement duct is to provide better means of dissipating heat. The expense involved in the installation of cement duct and the pulling into this duct of lead-covered cable was covered interestingly in a paper by H. C. Moyer of Oakland. It generally was agreed that lead-covered cable does not pull into cement duct as easily as into other types of duct. Underground junction-box design was commented upon in a paper prepared by H. G. Keesling of the Pacific Gas and Electric Company, Oakland. It is apparent that there is quite a field to be covered in the proper design of underground junction boxes. There is quite a wide difference in the practice followed by the various companies in the installation of underground junction boxes.

The testing of underground cables for heating caused considerable discussion. Two companies are spending much time in making complete tests covering this subject. Some very valuable data along this line will be available by January, and the results obtained are being looked forward to with great interest.

Meetings

Change Publicity Section Name To "Advertising Section"

Rehearsing much that was discussed at meetings of the Publicity Section of the Pacific Coast Electrical Association last year, the first meeting of that Section, held in the Los Angeles Gas & Electric Corporation offices in Los Angeles, Oct. 1, again decided upon certain changes in the functions of the Section from those previously in force. The organization structure, determined upon last year, however, was unchanged.

The decision to change the Section's name to that of "Advertising Section" came after considerable debate and was presented in the form of a resolution to be presented to the Executive Committee of the Association at its next meeting.

To head the Information Bureau of the Section, Fred S. Myrtle, Pacific Gas and Electric Company, San Francisco, was appointed by D. L. Scott, chairman of the Publicity Section. The Better Business Bureau appointment was given to M. W. Scanlon, Westinghouse Electric & Manufacturing Company. The chairmanship of the Bureau of Advertising and Publicity Technique was given to J. Charles Jordan, Pacific Gas and Electric Company.

Appointment of M. W. Scanlon, of the Westinghouse Electric & Manufacturing Company, San Francisco, to become vice-chairman of the Publicity Section, and of C. L. Burgess, Westinghouse Electric & Manufacturing Company, Los Angeles, to become secretary for the Section, followed. The next meeting of the Section was scheduled for San Francisco, just prior to the meeting of the Executive Committee of the Pacific Coast Electrical Association.

A resolution, presented by F. Z. Stone, of The Southern Sierras Power Company, Riverside, Calif., asking for a co-ordinated scheme of advertising and publicity on future government ownership activities, was written into the minutes of the Section. A special committee was appointed by D. L. Scott, chairman of the Section, to report on the resolution and make recommendations. F. Z. Stone was named chairman of this special committee on which Mr. Scott and R. E. Smith also are to act.

Lamp Sale Profits Discussed at League Meeting in Santa Cruz

"Profits from Lamp Sales" was the subject discussed before the members of the Electrical Development League of Monterey Bay territory at one of its recent meetings by Morris Hixon of the Edison Lamp Works, San Francisco. Mr. Hixon stressed the fact that light is inexpensive and should be used freely. He also stated that contractors could use this as an argument in selling higher wattage lamps.

The type of Christmas circulars to be sent out by the members was discussed at some length. One similar to that used last year was finally agreed upon. Walter Cox of Santa Cruz, president of the organization, presided at the meeting, which was held in that city and attended by forty-seven members of the organization.

Seattle Club Golf Tournament Won by T. S. Wood

The golf tournament of the Electric Club of Seattle, which has been under way throughout the summer months, ended recently with T. S. Wood, vice-president of the Electric Club and Northwest representative of the Packard Electric Company, the winner. Mr. Wood, working his way up from the bottom, first defeated Ray Robinson of the Robinson Sales Company, 5 and 4; Mr. Sampson of the Hurley Machine Company, 3 and 2; Dan Chamberlain of the Globe Electric Company, 2 and 1;

T. S. WOOD

Jack Agutter of the J. J. Agutter Electric Company, 1 up; Fred Block of the Pacific States Electric Company, 1 up after 30 holes; Pat Murphy of the General Electric Company, 1 up after 35 holes.

The game with Mr. Murphy was a hard-fought battle, being played over the Inglewood course in a brisk wind on wet greens. The trophy won, a cup, was donated by Harry J. Martin, for two years president of the Electric Club, recently succeeded by David M. Roderick of the Hoover Company. Besides the cup, there were nine other fine prizes given by the leading jobbers and manufacturing firms.

COMING EVENTS

Public Relations Section, Northwest Electric Light and Power Association—

Meeting of Women's Committee at Salt Lake City, Utah, Oct. 23, 1925

Commercial Section, P.C.E.A.—

Meeting of Executive Committee with chairmen of Subcommittees
Pacific Gas and Electric Building, 245 Market Street, San Francisco
Oct. 23, 1925

National Association of Railroad and Utilities Commissioners—

Kansas City, Baltimore Hotel
Feb. 9-12, 1926

Lighting Bureau Plans Discussed by Illuminating Engineers.—The plans of the lighting bureau of the Pacific Coast Electrical Association for the coming year were discussed at a recent meeting of the Illuminating Engineering Society in San Francisco. Clark Baker of the National Lamp Works is chairman of this committee, and he presented a number of the suggestions which were discussed.

Electric Transportation Association Discusses Advertising.—Cooperative advertising was the main topic of discussion at the September meeting of the Electric Transportation Association of San Francisco. Those present expressed their ideas on the subject and offered various suggestions. A committee was appointed to investigate the problem more fully and to present a report with recommendations at the next meeting.

Book Reviews

A LABORATORY MANUAL OF ELECTRICAL SCIENCE

By R. O. BUCK and H. E. FROST, Instructors Electrical Department Lane Technical High School, Chicago, Ill.; paper binding; 136 pages; 68 illustrations; 8 tables; 12 sheets; 10-in. X-section paper; $1.44. The Bruce Publishing Company, Milwaukee, Wis.

This work is an excellent collection of elementary experiments in electricity covering at least a full year of high school study. The experiments, fifty in number, range from extremely simple quantitative studies of magnetism to quantitative measurement of resistances, line losses and efficiencies. In general the experiments are more descriptive than quantitative in character. The apparatus called for in many of the experiments is simple and where more expensive equipment is used it is of standard commercial type. Several of the experiments presented for student use are on phases of the subject which usually are treated as demonstration experiments.

The book is of the loose-leaf type and contains an ample supply of co-ordinate paper as well as sheets of electrical tables and conversion tables. Its press work is excellent so that the sheets present a neat and attractive appearance. All directions to the student are printed in ordinary type while the questions to be answered, of which the book contains a large and well chosen assortment, stand out in bold-faced type. Spaces are left between paragraphs for written answers to the questions. The book is supplied richly with illustrations for every experiment. These include symbolic circuit diagrams, line and perspective drawings.

The chief criticism which occurs to one examining the manual is that perhaps the authors have done too much for the pupil for his own good. It may be questioned whether the pictures and diagrams of connections are not too explicit for the best development of initiative in the case of the better students. Many teachers do not approve of the rigid, "fill-in-the-blank" type of experiment write-up and to such this manual would not appeal particularly.

On the whole, this manual is a piece of work well worth while that should prove of considerable use in high-school classes in elementary electricity. It would seem to be adapted particularly to the need of the average and poorer students who have to lean rather heavily upon the manual for detailed guidance. E.C.S.

Personals

A. H. Nicoll has been appointed sales manager of the Western Electric Company, San Francisco. His connection with the electrical industry dates back to 1908 when he began selling lamps for M. A. Bryte of San Francisco. In 1909 he entered the employ of the West-

A. H. NICOLL

ern Electric Company as sales record clerk. In 1912 he resigned to become appliance sales supervisor for the Utah Power & Light Company in Salt Lake City, Utah. In 1913 he again became associated with the Western Electric Company as city salesman in that city. Three years later he was appointed office specialist in charge of office sales. In 1920 Mr. Nicoll was transferred to San Francisco as a telephone specialist. After ten months in this work he was appointed specialty sales manager in charge of appliance sales. He occupied this position until Oct. 1 when he became sales manager. Mr. Nicoll has been very active in the affairs of the electrical industry, particularly the Pacific Coast Electrical Association. At present he is a member of the executive committee of the commercial section. He is also a director of the San Francisco Electrical Development League.

K. B. Ayres, W. H. Talbott and **C. C. May** represented the San Diego Consolidated Gas & Electric Company, San Diego, Calif., at the September meeting of the Technical Section, Pacific Coast Electrical Association in Los Angeles.

L. C. Ready, chief engineer for the California State Railroad Commission, and **H. C. Butler,** power supervisor for California during the war, have been employed by the Los Angeles Municipal Power Bureau to make a detailed survey of the power needs of southern California and particularly Los Angeles. They are to work in conjunction with the Chamber of Commerce committee of fifteen, which has been appointed by that body to make a power survey.

J. D. Ross, superintendent of lighting, Seattle, recently spoke on **"How to Prepare for an Electrical Career" at the** Y.M.C.A. in that city.

Arthur C. Noad, of B. W. Frank & Company, in charge of that company's San Francisco office at 306 Crocker Building, and **B. W. Frank,** of the same company, in charge of its office at 330 San Fernando Building, Los Angeles, have announced that the company has been appointed California representative for the Circle F Manufacturing Company, Trenton, N. J.

D. J. Young, formerly of the San Diego Consolidated Gas & Electric Company, San Diego, and now consulting gas engineer, Byllesby Engineering & Management Corporation, was a recent San Diego visitor.

K. L. Francis, general manager of the Albert Sechrist Manufacturing Company in Denver since its reorgnaization, has been elected president of the company following the recent death of Mrs. Hattie Sechrist. **W. E. Sweet,** former governor and prominent capitalist, was named vice-president; **A. C. Foster,** well known banker, treasurer; and **A. J. Fowler,** Denver attorney, secretary.

C. B. Merrick, formerly sales engineer, San Joaquin Light & Power Corporation, Fresno, Calif., will be district manager of the newly opened Los Angeles office of the Sandoval Sales Company, which has taken over the sale of Wesix electric heaters in southern California, Arizona and New Mexico.

H. W. Grant, since Jan. 1, 1924, superintendent of transportation of the southwestern district, Puget Sound Power & Light Company, Tacoma, Wash., has resigned to go into private business at Everett, Wash. Prior to coming to Tacoma, he had been associated with the Puget Sound Power & Light Company in many places and capacities, and is well known among electrical men in the Northwest. He is succeeded by **T. F. Marsh,** formerly superintendent of city lines.

W. L. Frost, Southern California Edison Company, **H. H. Walker,** of the H. H. Walker Company, and **P. H. Booth,** Edison Electric Appliance Company, all of Los Angeles, attended the meeting of the Advisory Committee of the California Electrical Bureau in San Francisco recently.

Robert Miller, Rocky Mountain district manager of the General Electric Company, Denver, has been elected to membership in the Denver Rotary Club.

L. M. Cargo, district manager of the Westinghouse Electric & Manufacturing Company, in Denver, has been re-elected a member of the board of directors of the Lakewood Country Club in that city.

H. P. Whitten, Western manager of the Apex Electrical Distributing Company, has been elected a member of the board of directors of the Commerce State Bank in Denver.

J. B. Witte, formerly equipment supervisor, protection engineering department, Southern California Edison Company, Los Angeles, is now division superintendent of substation operation for that company's northern division, which comprises the San Joaquin Valley properties.

J. W. Andree is the new chairman of the prime movers committee of the P.C.E.A. Technical Section. Mr. Andree has been associated with the power production department of the Southern California Edison Company, Los Angeles, for many years, in particularly close touch with all the mechanical features of the company's hydroelectric and steam stations.

J. Barclay Naugle, Western sales manager for Naugle Pole & Tie Company, Chicago, has opened Pacific Coast headquarters at 709 Call Building, San Francisco. The company maintains a branch office in the Peyton Building, Spokane, Wash.

W. E. Creed, president, Pacific Gas and Electric Company, San Francisco, returned Oct. 1 from a three months' tour in Europe.

W. R. Frampton, superintendent, meter and test department, Southern California Edison Company, Los Angeles, heads the safety rules committee of the Technical Section, P.C.E.A., for the ensuing year.

R. R. Cowles, 1925-26 chairman of the Technical Section of the Pacific Coast Electrical Association, needs little introduction to members of the electrical fraternity on the Pacific Coast. For several years he has been intensely active in both national and Pacific Coast Technical Section activities, serving as chairman of the Underground Committee for 1921-22; as chairman of the Safety Rules Committee for 1922-23; as chairman of the Overhead Systems Committee for 1923-24, and as vice-chairman of the Technical Section P.C.E.A. for 1924-25. Mr. Cowles has been a member of the National Overhead and National Underground Committee for some eight or nine years. At the present time he is vice-chairman of the National Overhead Systems Committee and as chairman of the Technical Section P.C.E.A. is a member of the National Executive Committee. He is particularly interested in association work and well qualified for his responsibilities. Although a native of the state of Michigan, Mr. Cowles is a graduate of the electrical engineering department of the University of California of the class of 1909. He entered the employ of the Pacific Gas and Electric Company in 1910 in the electric distribution department in

R. R. COWLES

Oakland. By 1921 he had become superintendent of underground distribution. At that time he was transferred to his present position in the central office in San Francisco as assistant engineer, department of electric distribution and steam engineering. In this connection his activities are devoted to overhead, underground, street lighting, line construction and metering problems on all lines of 25,000 volts and less. Mr. Cowles is a member of the American Institute of Electrical Engineers and of the Illuminating Engineering Society.

F. B. Schuyler, president Johnson Washer Company, Oakland, Calif., recently left on an extended Eastern trip. The company has been extending its trade territory actively during the past few months.

O. L. LeFevre, superintendent, Northwestern Electric Company, Portland, spent the latter part of September in the East attending meetings of committees of the Technical Section, N.E.L.A. at Detroit and New York.

R. L. Hearn, formerly assistant chief engineer, The Washington Water Power Company, Spokane, now in private engineering practice at Niagara Falls, N. Y., recently visited Spokane and Coast points.

F. H. Lane, manager engineering and construction, Byllesby Engineering & Management Corporation, and **H. Boyd Brydon,** mechanical engineer for the same company, visited the San Diego Consolidated Gas & Electric Company, San Diego, Calif., for several days recently.

H. H. Kerr, electrical superintendent of the Public Service Company of Colorado, Denver, is spending several weeks in New York City in connection with the placing of orders for a new generator and supplementary equipment to be installed in the new Valmont plant of the company.

P. E. Chapman, who has been named chairman of the underground systems committee, P.C.E.A. Technical Section, is superintendent of the underground system of the Pacific Gas and Electric Company, San Francisco. He has been connected with underground system work for twelve years or more.

E. B. Criddle, of the Southern Sierras Power Company, Riverside, was a recent visitor to San Francisco in the interests of his company.

D. M. Roderick, Seattle district manager of the Hoover Company, North Canton, Ohio, is the newly elected president of the Electric Club of Seattle. Mr. Roderick has been connected with the electrical industry for a number of years, having been closely associated with The Hoover Company since 1908. He has been an active member of the Seattle club, and the organization has been looking forward to an interesting and successful year under his administration. Mr. Roderick served during the World War as a captain of infantry in the capacity of minor tactics specialist. He is a graduate of the College of Wooster, Ohio.

D. M. RODERICK

K. E. Van Kuran, district manager, Westinghouse Electric & Manufacturing Company, Los Angeles, recently left on a six-weeks trip to the factory at East Pittsburgh and other eastern offices of the company. Mr. Van Kuran expects to return by way of Seattle.

L. L. Lamb, formerly assistant superintendent of equipment of the southwestern district of the Puget Sound Power & Light Company, Tacoma, Wash., has been promoted to be superintendent of equipment, taking the place of **K. C. Schluss,** who has been transferred to the Western United Gas & Electric Company, Aurora, Ill., a Stone & Webster property.

Edward Woodbury lately returned to the Los Angeles office of Stone & Webster, Inc., from the Baker River development in Washington, to resume his former duties as executive electrical engineer in connection with the addition to the Long Beach steam plant being constructed for the Southern California Edison Company.

Frank Von Ah has been placed in charge of the newly opened branch of Allied Industries, Inc., at 305 Ninth St., Oakland, Calif.

F. W. Paterson, assistant manager, switchboard sales department, General Electric Company, Schenectady, N. Y., recently visited San Francisco. Mr. Paterson formerly was for five years in the San Francisco office.

O. B. Stubbs, president Stubbs Electric Company of Portland, Ore., was a recent visitor in San Francisco.

F. N. Averill, with the Fobes Electric Supply Company, Portland, recently visited San Francisco in the interests of his firm.

W. W. Crocheron, formerly assistant manager of the service department of the Westinghouse Electric & Manufacturing Company in Denver, has been transferred to the Salt Lake City office of the company as a salesman in the central station division.

Thomas F. McDonough recently has arrived in Los Angeles to represent the Benjamin Electric Manufacturing Company. Mr. McDonough, who was formerly connected with the same company in Seattle, succeeds **Herbert J. Mayo.**

J. E. Macdonald, chairman of the Joint Pole Commission in Los Angeles, recently left on a business trip through the East. While there he will attend the conference of the Joint Pole chairmen in New York.

E. P. Kipp, representative of the Hazard Manufacturing Company, Denver, Colo., was a recent visitor in Salt Lake City, Utah.

H. R. Bygel, associated with the United Electric Supply Company, Salt Lake City, recently made an extended business trip through Idaho.

Lewis A. Lewis, sales manager, The Washington Water Power Company, and president, Northwest Electric Light and Power Association; **W. H. Ude,** director of public relations of the same company, and chairman of the association's Public Relations Section; and **J. E. E. Royer,** assistant general manager, were among the speakers at the first meeting of the organization of the women of that company. **Miss Mary K. Walsh,** chairman, also spoke.

H. N. Kalb, telephone engineer for the San Joaquin Light & Power Corporation, Fresno, Calif., is the new head of the inductive co-ordination committee of the Technical Section, P.C.E.A.

E. F. Stone, elected president of the Colorado Public Service Association at its recent convention at Glenwood Springs, Colo., is the assistant general manager of the Southern Colorado Power Company, a Byllesby property, with headquarters at Pueblo, Colo. He is a native of Virginia and received his earlier education in that state. His first engineering experience was gained with the Consolidated Gas & Electric Company of Baltimore. He later became associated with the Norfolk & Portsmouth Lighting & Traction Company of Norfolk, Va., and while with that company designed and constructed all of the electric service requirements for the Jamestown Exposition. In his present position Mr. Stone is in charge of power transmission, city distribution, commercial sales and public relations. He is a charter member of the Pueblo Commerce Club, Pueblo Engineering Association and Lions Club. Mr. Stone served as first vice-president of the Colorado Public Service Association before his recent election to the presidency.

E. F. STONE

R. M. Alvord, of the General Electric Company, San Francisco, was in Los Angeles recently in the interests of his company.

George E. Lewis, head of the Rocky Mountain Utility Information Committee, with headquarters in Denver, attended the annual conventions of the American Electric Railway Association and American Gas Association in Atlantic City.

Obituary

Robert E. Davis, chief operating accountant, Pacific Power & Light Company, Portland, died Sept. 11, 1925, after a short illness. He was born in Portland in 1861 and spent the greater part of his life in that city. After the Spanish-American War, in which he served as a captain in the Second Oregon regiment, he took the position of secretary of the Willamette Iron & Steel Company, Portland, remaining until 1910, when he joined the accounting staff of the newly incorporated Pacific Power & Light Company.

TRADE NOTES

B. W. Frank & Company recently have been appointed the California representative for the **Circle F. Manufacturing Company**, Trenton, N. J. The latter company is an amalgamation of the E. H. Freeman Company and the Trenton Porcelain Company, both of Trenton. The Frank company maintains an office at 306 Crocker Building, San Francisco, in charge of Arthur C. Noad, and one at 330 San Fernando Building, Los Angeles, under the management of B. W. Frank. Through the addition of several new lines the company now has a complete line of wiring devices.

Gisholt Machine Company, Madison, Wis., has issued a small folder illustrative and descriptive of the cardinal points of superiority in the Precision balancing machine manufactured by the company.

The Erie Malleable Iron Company, Erie, Pa., has announced a new type of threadless conduit fitting, tradenamed Kondu-Box, for which a great economy of installation is claimed. A complete line of these fittings, both round and oblong, is in production.

S. C. Johnson & Son, Racine, Wis., has issued a folder describing a new household electrical device to be known as Johnson's wax electric floor polisher. The company expects to place this on the market shortly.

A. Lietz Company, San Francisco, manufacturers of engineering, surveying, mining and nautical instruments, announces the publication of the fifteenth edition of its catalogue. While the major part of the book is taken up with illustrations and descriptions of instruments, a number of pages are devoted to drawing materials and field equipment.

Superior Refrigeration, Inc., Lima, Ohio, has announced the production of two types of electric refrigerating machines for household and commercial uses that are designed for use in meat markets, grocery stores, delicatessens, ice cream cabinets, as well as in residences and apartments.

Shere Metal Products Corporation, New York City, has a new device known as the Super-High Pressure Grease Gun which it claims fits on all the lubricating systems on cars and can be used to lubricate trucks, tractors, cranes, road-building machinery, building machinery, newspaper presses, printing and bindery machinery, mill machinery, steamship and railroad equipment, shops, locomotives and similar equipment.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, has issued its new catalog No. 1737, which is illustrative and descriptive of its auto-valve lightning arrester.

Templeton, Kenly & Company, Ltd., Chicago, have available for distribution a report of the Underwriters' Laboratories covering tests and calibration data on their track jack. The calibration data are interesting and quite complete. There is a possible application of these jacks to pole-pulling.

The Estate Stove Company has announced a change in address from 366 Post Street to 180 Montgomery Street, San Francisco.

Electro-Kold Corporation, Spokane, Wash., has issued a folder which is descriptive of its new bungalow model Electro-Kold refrigerator. The folder is illustrated and describes the attractive features of this new model.

Cunningham Electric Company, Seattle, Wash., has filed recently an amendment with the secretary of state, increasing the capital stock of the company from $10,000 to $50,000.

Cookhouse help on the recent General Electric Company outing staged at the picturesque mountain home of J. O. Case, assistant manager of the Los Angeles branch, high up in the San Bernardino Mountains. Horseshoe-throwing, boxing, hiking and fishing furnished the principal outdoor features Saturday afternoon and Sunday. Various forms of indoor sports were enjoyed through the long night watches. Under the capable leadership of Joe Case, chef extraordinary, the culinary department provided food fit for the gods. Before breaking camp it was unanimously voted to make the outing an annual institution. Left to right are H. L. Schunk, J. S. Spurck, J. O. Case and H. C. Hill.

Allied Industries, Inc., with headquarters at San Francisco, and branches in Los Angeles, Calif., Portland, Ore., and Seattle, Wash., has opened a branch at 305 Ninth Street, Oakland, where a complete stock will be carried to serve the Oakland jobbing trade of the East Bay territory. Frank Von Ah will be in charge.

Allen Electric Manufacturing Company, Detroit, has issued catalog No. 26, which describes and illustrates its line of automotive electrical testing equipment and tools.

The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has issued a 16-page catalog describing the various features of its magnetic clutches. The book is well illustrated with photographs and diagrams.

General Electric Company, Schenectady, has added a new engine-driven welding set to its line of welding equipment. This outfit consists of a standard WD-12 welding generator driven by a 4-cylinder, 22½-hp. Buda engine, all mounted on wooden skids to facilitate moving from place to place.

Union Miniere du Haut Katanga is now producing and will offer its cobalt metal, salts and oxides to the market early in November. Inquiries may be addressed to the company's cobalt department, Room 609, 67 Wall Street, New York City.

The Four-Wheel Drive Auto Company, Clintonville, Wis., has issued a new catalog, illustrative and descriptive of its earth-boring and pole-setting equipment, which digs the holes and sets the poles. This equipment is distributed by the Western Electric Company.

The Electric Controller & Manufacturing Company, Cleveland, Ohio, has announced the appointment of **Eicher & Bratt**, Seattle, as representatives for the sale of E C & M control equipment in the states of Oregon and Washington, Alaska and the "Panhandle" district of Idaho.

Electrical Repair & Equipment Company is the name of a new organization that has opened a well equipped shop at 1160 Bryant Street, San Francisco, for the repair, rewinding, etc., of motors, generators and transformers. Harry Farquhar, formerly with the Oakland works of the General Electric Company, and John W. Massie, formerly with the switchboard department of the General Electric Company, are partners in the company.

Wagner Electric Corporation, St. Louis, Mo., has announced that it will handle the servicing and distribution of replacement parts of the **Hydraulic Brake Company**, which owns and controls the patents of Lockheed four-wheel hydraulic brakes.

The Mutual Electric & Machine Company, Detroit, recently has developed a new device called Bull Dog Safety Fusenter, which it is claimed is an ornamental, luminized case designed to be installed, flush with the wall surface in any room, hall or stairway wherever most accessible for the replacement of a fuse.

Charles Cory & Sons, Inc., New York, has issued a new bulletin describing the Cory audible and visible signals featuring turbine order systems.

The Hurley Vacuum Cleaner Company, Chicago, Ill., has announced the manufacture of a new vacuum cleaner. It is a double-duty machine as it may be used as a straight suction type.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, has developed a new high-intensity spotlight designed for the purpose of illuminating traffic officers stationed at street intersections.

Brown Instrument Company, Philadelphia, Pa., has issued a new catalog, No. 87, containing illustrations and descriptions of its automatic temperature control instruments.

Valley Manufacturing Company, Des Moines, Iowa, has placed on the market what is claimed to be an innovation in corn-popping machinery, an electrical corn popper. A peanut roaster is also part of the device.

The Swartzbaugh Manufacturing Company, Toledo, Ohio, formerly the Toledo Cooker Company, has issued recently a new illustrated booklet describing its extensive line of Everhot products.

Premier Electric Company, Chicago, has issued bulletin No. 95, which fully describes its entire line of radio parts, including the Premier "Ensemble."